Share your knowledge
It's a way to achieve immortality

The idea of sharing these notes is to help all students appearing for their practical exams (specifically DNB - all know why). I think there is a need to bring out such kind of book which give you idea what to ask a patient during final practical examination. As we all know the time given during practical examination is limited, we tend to miss out on some important points in history/examination. Once you missed out in history/examination (which any1 can under pressure), there starts a problem during viva. So, its very imp. not to ignore history/examination part of your viva and never fumble during your case presentation (idea is to secure those things which are in your hand).

Case history is followed up by discussions in almost all the chapters which is totally practical based and you may not find it any textbooks (so you can therefore change the answers based on what you practise in your institute)

In the end i tried to add general follow up protocols (oncology), chemotherapy schedules, CA staging, 5 year survivals (i had modified them to make them easily reproducible).

I had not typed my notes as i think my handwriting is quite readable, if any1 find it difficult to understand let me know. I will try to get them typed and resend them.

I will like to thank Dr MR Desai, Dr RB Sabnis, Dr Arvind Ganpule, Dr Shashikant Mishra, Dr Abhishek Singh, Dr Jaspreet and of course my colleague's Dr Mohan, Dr Darshan, Dr Vinodh who helped me in learning urology and other aspects of life.

I want to give credit to Dr Mohan who helped me out in writing the case histories.

I thank my family for unconditional support provided by them during my residency.

In vain have you acquired knowledge
if you have not imparted it to others

Hope you all will get benefitted by these notes

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CASE HISTORY NOTES BY DR ANKUSH JAIRATH MBBS MS DNB UROLOGY

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First case - CA Bladder

CA Bladder

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Resident In Urology

Date :

REVIEWED
By ankush jairath at 5:25 pm, May 12, 2016

STORY

Hematuria → Duration , Gross/uscopic ,
Painful / painless , Initial Terminal Total
Ass. c Clots [serpentine / amourphous]
Any tissue bits
No. of episodes (severity)
Persistant / on-off
H/o Blood TF / Hospitalisation
Present Status (Clear / Hematuria +)
How much per void he voids (Capacity)

H/o LUTS] URGENCY frequency incontinance Intermittency
ass. CIS / TB
DYSURIA]
fever, Burning micturat^{n}] Cystitis
Lithuria , flank pain , Stone dis
Uro Intervent^{n} / Instrumentat^{n} – Previous Cystoscopy
flank fullness / Abdominal lump
Wt loss / loss of apetite – >10% in 6 months
Drug- analgesic abuse / anticoagulants (Blood thinners) / Cyclophn
H/o Bleeding disorders] H/o Generalised bleed^{g} tendency / Bleeding from any other site
H/o Contact c Koch^{s} dis] Young
H/o UTI / Radiat^{n} / Schistostoma (Egypt)
Metastasis s/s → Cough , bonepain , jaundice , hemoptysis
Pedal edema / facial puffiness – CKD
T.B. Constitutional Symptoms [low grade fever , generalised weakness malaize , evening rise , Past history ,

Date

DD

OLD (>50yrs) → YOUNG (<50yrs)

ower tract Malignancy	✓
Upper tract Malignancy [RCC TCC]	✓
BEP c/ Cystitis (cout)	Stone disease
CA prostate	GU Koch's
Stone disease	PUJO
GU Koch's	ADPKD
Hematochyluria	
ADPKD c Cyst bleed[g]	
PUJO c trivial trauma	

→ Tea/Coffee

al HISTORY → Smoker [Pack year is defined as twenty cigrettes Smoked everyday for 1 year]

20 Sigrettes = 1 Pack

So 40 Sigrettes x 6 months = 1 Pack/year

ccoupation - Rubber, Chemical, dye, Tar, Painting worker

ravel - Egypt - Schistosomias

iet, Bowel habits, In female - Mensural history ← Inv, Pause, Durat[n], Cycle, Amount

y history:- Prostate / TB → Obstet history - no./abort/live mode of delivery / Last child

rents - alive - Status of health

died - Cause / Natural / diseased (1st degree relative - 2 times risk)

otus of Spouse & Children

Allergy [

H/o of TB → Relative CI → Do Urine R/E → If microscopic hematuria(!) → Donot give BCG

as small doses can also lead to BCG sepsis / ↑ed absorption

Examination:- P.C.C. OT TPP MBMN / P I CY CL LAP PE

P - Regular BP - ECOG - KPS -

P/A → INSPECTION - All quadrants more equal c resp.

Umblicus - Midline / deviated - side/up

Scar, flank fullness, pigmentat[n] / dialated vein

Visible swelling, hernia Sites

(1st) Shape of abdomen - (N)/obese/scaphoid/distended

Palpation:- Tenderness, organomegaly, fluid thrill, Temp

Swelling, Ballotable, bimanual palpable

G⁻/R⁻

Percussion:- Generalised note / Shifting dullness /

Liver/Spleen upper border / Renal ∠ tenderness

Auscultat[n]

Respiratory / Cardiovascular / CNS / Spine

E.Genitalia → sph.

CKD Signs → SKIN - Sallow appearance, uremic frost, pruritic excoriat[n]

→ Pleural effusion, Pericardial rub, anaemia, Uremic fetor, Bone pain

Pot belly & Rickets rosary In Child Nails → brittle

Distil Pink transverse band
Pull white band

B/L HUN → STENTING NOT To be done ← Technically difficult, Reflux of urine to upper tracts
Bladder CA) Chances of tumor seeding
Cystoscopy → empty bladder → EUA → TURBT
or EUA :- Bladder Should be empty
Always / s. relaxation] To be done In every case pre resection (i.e. pre TUR-BT) & If planning for complete / radical TUR-BT ⇒ then Post resection also

→ Most not palpable, but large bulky tumor, sessile may be palpable
→ Not palpable after resection

Mobility
up & down
Side to Side

→ Palpable even after radical TUR-BT
→ fixed / Immobile mass

ystoscopy S/o Mus. Inv. :- Big, Solid, Sessile, Calcified, Necrotic mass

Mitomycin c̄ in 6 hrs :- To prevent tumor Implantat" In sites ther than original (Sites prone are those having microtears of urothelium, after 6 hrs & more so after 24 hrs epithelialisation occours so mitomycin becomes Ineffective / less effective)
tes Recurrence

multaneous TURP doesnt ↑ Risk of Implantation

* BCG administration :- Pt Dehydrated State (diuretics Should be Stopped), alkalanise urine, Urine R/E → (N), Proper disposal of urine (HYPOCHLORITE SOLUTION)

* TUR-BT To ↓se obturator Reflex → GA c̄ mus. relaxat"
Cause → Direct Contact of Current c̄ tissue containing N. endings of obturator nerve so give Small, Stepwise, Frequent Cuts
Pure cutting c̄ thin loop, bipolar, obturator block

* Random biopsy are always Cold Cup biopsy → No Current
Not TUR-biopsy

* Hydronephrosis Causes In Bladder Cancer
  - Direct U.O. Involvement
  - L. nodes
  - Papillary fronds obstruct U.O.
  - TRIGONE Involvent
  - Bladder Clots
  - Edema
  - Synchronous lesion

*

MONOPOLAR	BIPOLAR
· Better coagulat"	· Better Cutting
· Scar - less	· more
· TUR- Synd ✓	· 2% Obturator reflux

* Loop 

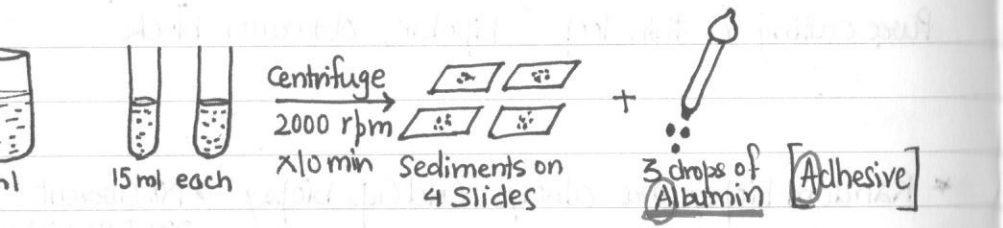
Post wall tumor

To decide on Cystoscopy for either Complete removal or only Biopsy

Difficult locatⁿ | Multiple | Bimanual Palpable Sessile, broad base | Dome ↓ Adeno.

t· wall, diverticula]

CYTOLOGY PROCEDURE



Centrifuge 750 rpm x 5 min ⟸ (+)50% Ethanol (FIXATIVE) ← 10 min allow to fix ← ry the Slide

↓ Add Papanikolaou Stain → 40 min → See under microscope [LOW POWER]

[5 dye, Hematoxylin, Eosin, OrangeG, Ligh Green SF, Bismark brown]

Obturator N. Block → USG guided

+/- N. Stimulator

ine positⁿ c 30° abduction @ hip

nt (on Site # is to be given)

cm lateral & Caudal to pubic tubercle

G, 8-10cm long needle ⊥ to Skin

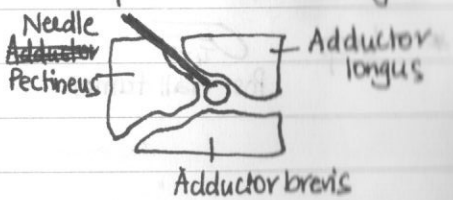
anced 2-4cm deep → encounter Inf. Pubic rami

nced 2-3 & Checked ← enters Obt. canal ← Direct" changed to lat. & caudal

-Stimulator & -ve aspiratⁿ → Inject 15ml LA

Supine positⁿ

USG probe @ medial of thigh



In plane Approach

REVIEWED
By ankush jairath at 5:25 pm, May 12, 2016

Second case - VVF/UVF

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Resident in Urology

Date :

VVF / UVF

H/o Incontinance

- Continous (OVERFLOW, VVF)
- Intermittent (Urge, Stress, Small VVF)

- Duration
- How it is started < Spontaneous / event
- Positional variation
- Quantity of leak
- (N) voiding In betⁿ (How many times, amount)
- Ass. LUTS (urgency, UI, SUI)
- Any previous Intervention / surgery → Duratⁿ of Sx, Intraop complicatⁿ, H/o BTransfusion, Vaginal or abd. Sx, H/o Post op ileus, H/o hematuria post op or Irritable bladder symptoms
- Any post C.S. acute Retention [∵ Pain / Constipatⁿ / Neuropraxia → Cobalamine]
- Any foul smelling vaginal discharge

H/o iteology

obstructive labour | Antepartum history | C.S.

COMPLICATION HISTORY

UTI
Fever, Pyuria, Burning micturatⁿ, Flank Pain, Hematuria

Renal failure
Facial edema
Pedal edema
loss of apetite

Malignancy
loss of weight
Any known malignacy
Prior radiatⁿ [earliest VVF 6 months]

Perineum Local Skin
Excoriatⁿ
Pruritis
Pain

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Sexual history → Married / Children / Delivery / Sexually active / dyspareunia

Mensural history • Medical Co-morbidity

E - Nourishment, Pallor, Facial / Pedal edema

P/V - Combined finding of Inspection / Palpation on P/V & Speculum examination are

Mons pubis, labia majora minora folds well developed
good fat pad. Prolapse if any

Perineal skin - Dry, excoriation, wrinkling, redness, temprature, scraches

EUM - Position, Calibration upto __ cout resistance

Vagina mucosa looks healthy / atrophied, Supple Pink / Indurated / Pale, lubricated / dry, non tender

During speculum examination ~~vagina easily admitted~~ blade went In vagina easily / with difficulty

Vagina appears to be capacious [≥3 fingers → Capacious]

fistula → SIZE, Site (ant. vaginal wall) relation to cervix & Bladder Neck

distance from EUM, midline or Skewed laterally < (R) (L)

mucosa around fistula < Pink Supple / Pale Indurated, Inflammed Tender, Shape

number, Pooling of urine In vagina

CERVIX → Lips - Supple fornices - Non tender

Vaginal Vault prolapse if any

→ Stamey grade → next page

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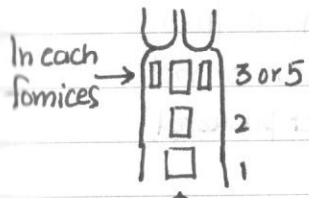
Cough test → tve / not (R/o ass. SUI)

P/A - Any Significant finding? Scar mark ??
Bladder / Kidney

* SWAB TEST - 5 Swab test → Very poor Sensitivity

Only if fistula is not localised on P/E



Oral Pyridium (morning) - 2 tab
↓ 2 hrs
1. Vesicle - Methylene blue
See Swabs

2 → if orange does not Indicate anything unless 3-5 are also orange - UVF

* MCUG → Only if fistula is not localised on P/V examination
FILM - lateral / voiding film → most Imp.

* USG KUB - All patients

Urine C/S → Pooled urine Sample
[I know vaginal commensal can come but still]

* CYSTOSCOPY - All patients -
Calibrate the urethra before scopy (R/o urethral Stenosis)
fistula relation ⊂ bladder neck & trigone & U.O.
[as trigone is not fixed pt. In every pt so In addition to describe fistula w.r.t. trigone, describe ⊂ relation ⊂ bladder neck also]

* CT IVP Indication In VVF :-
  - For proper delineation of tract
  - pain / fever / HUN - ureteric Stricture - UVF
  - Early post op period – To see for collection
  - f(x) of Kidney if UVF Is there
  - Post Malignancy & post radiation VVF
  - Large fistula / any fistula near U.O. – to See for course of lower ureter & further to decide need for relmplantation or not (∵ fistula → fibrosis → U.O. may get puckered)

* CT IVU vs Plain IVU :- In case when there Is small leakage trickle can't be see / may be missed
  - Concomitant VVF Can be demonstrated
  - opening of ureter w.r.t. VVF
  - Any dye going beyond tract (UVF)

Any UVF → Injury to ureter → Necrosis → leakage of urine
↓
opens Into vagina

of UT
always) ← Passage of urine (Non Peristaltic) ← Complete transection / Partial transection
UVF

* If no leak @ examinat^{n} → Indicates fistula may be small

* If there Is cont. leakage → Ass. severe Stress Incontinance
  [So see for Urine leakage from urethra]
  Simultaneous repair of SUI c̄ fistula repair ←
  In same sitting c̄ SUI repair preceeds fistula repair

* Stamey Incontinance Grade

(1)	(2)	(3)
Incontinance c̄ Sudden ↑se In abdominal pressure (cough, sneeze)	Incontinance c̄ lesser degree of Stress e.g. walking / Standing	Incontinance c̄out any relation to Physical activity / position

* U/L HN + VVF → When VVF Is very close to U.O leading to its puckering / fibrosis

* Post L.S.C.S. VVF :- Suturing / accidental Cystotomy or Cautery Injury

* Causes of full bladder even if cont. Incontinance
  - Small VVF
  - Ass. UVF

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Date

* Post Surery UVF - No need to wait → Can go ahead c Immediate repair In UVF

* In VUF Cause of persistant leak even after succecful DJS
  - → Bladder spasm (Change long tip → Short tip)
  - → Urinoma (takes Some time to resolve)

* VVF
  - Abdominal hysterectomy → Supratrigonal → least
  - Vaginal Hysterectomy → Infratrigonal → Cause of ureteric Injury Is ass uterine prolapse / Cystocele → descend of ureter c that → Injury
  - Laparoscopic Hysterectomy → Trigonal → Most prone, Time of tritat^n may be delayed ∵ of use of Cautery

Repair

- TRANSVAGINAL
- TRANSPERITONEAL (EXTRA+ Intra vesicle) — O' CONOR
- TRANSVESICLE Extraperitoneal — Cut vernat

SHLOMO RAZ
- High Supratrigonal, Redo, Reimplant, Bad exposure, Put Omentum → VVF Near dome
- fine Suture material
- Proper mobilisation
- Suture line should nt Superimpose
- tension free

But -- No tissue Interposition

* leakage
  - 2nd/1st POD c PUC In Situ
    - From vagina
      - Blocked Catheter
      - Ass. UVF
      - Missed small VVF
      - faulty technique
      - foley lateral" Suture line → Short tip / Prone (Should Stop) [Suture line on top & foley bulb on floor]
    - PeriCatheter
      - full bladder
      - Bladder Spasm
      - # foley
  - Peritoneovaginal fistula

T/t
- Adequate drainage
- Keep bladder empty
- USG → see for Collect^n
- Drugs - antich.
- Bed rest / Prone posit^n
- PUC x 3 weeks

  - After 2-3 weeks
    - 2-3 week after PUC ⊖ pt starts leak Immediately → Insert PUC for 2 weeks more → Still leaky FAILURE → Redo Sx after 3 months assessment
    - 1 week after PUC ⊖ → 2° Cause
      - Infect^n (more common) → Ask for voiding pattern, Any fever, burning → Pul PUC ⊕ Ab.
      - BOO

F.U.
- Avoid Intercourse x 3 months
- 2nd pregnancy after 1 year
- further delivery elective LSCS

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* 12% Cases VVF can be ass. c UVF

* Avoidance of VVF during Sx

1. Immediate detect^{n} using dye → Bladder Injury
   - Watertight Closure
   - Put extravesical drain
   - Prolong bladder drainage

2. Avoid Vaginal Incision & even if given Interpose omentum

Third case

Urethral Stricture / PFUDD

Date :

Describe c/c

H/o Iteology :- Trauma , Instrumentation
Per urethral discharge , STD , Sexual Promiscuity
Discolouration of prepuce / Glans
Lilhuria / Stone disease
Circumcision
RSA → H/o Unconciousness / ENT bleed / able to sqat
BT / Rectal Bleed / Intervention / able to walk / pass urine / retent^n / Blood @ meatus / ass abd injury

H/o Complicat^ns :- Repeated Scrotal Swelling
Hematuria , CRF
Perineal fistula , Incontinance
Pyuria , fever , burning } UTI
Glans numbness (Vasculogenic ↓ , Neuropraxia more common)
ED , Nocturnal emission , Partial ED , ejaculation ↓ amount (small, 2ml)

H/o T/t :- PUC / SPC / attemp for PUC Insert^n / Stat output nature
Endoscopic procedure
Traction / Ext·fixator / Immobilisation
Present - able to walk / last SPC change / output

Personal :- Tobacco chewer , Smoking
Married , Children , Present Sexual history

Past H/o LUTS / Medication

(ACUTE ONSET) — YOUNG Pt. c̄ LUTS — (LONG DURATN)

Acute onset: U. Stricture, Stone dis

Long duration:
- U. Stricture
- Neurogenic bladder
- LAZY bladder
- PBNO

Examinatn :- Gait (N)

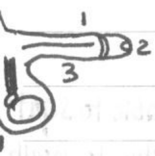
P/R - BCR +/- , Perianal Sensatn +/- , anal tone

BXO - Autoimmune dis - DM/Alopecia / vitiligo, thyroid, pernicious anaemia

E/G - Prepucial Skin , Penile Shaft Skin , Glans discolouratn

mobile, Puckered; Sensatn - Pink/warm

Phimosis / Paraphimosis / circumcision +/-



BXO (mottled appearance, Itching, loss of sensatn, Painful erection)
T/t - Non-Sx: Steroid TDSx8weeks, Ab-poxy, FLOURO, Topical TACROLIMUS

No E/o any lesion (ulcer / Nodule)

Meatus (N) placed at tip of Glans , No E/o wide/meatal Stenosis / discharge | Supple | Pink

local hygeine well maintained / friable / elastic / soft / Inflammed

Urethra on palpation supple, soft, Induratn +/-

Scrotum , Epididymis , testis & cord (N)

ORAL EXAM:- Inspectn - Mucosa - discolouratn PINK | PALE | Black patches

[Donot Say upfront unless asked or BXO tnt]

Oral huigine , Mouth opening , Palpatn - Induratn

Submucous fibrosis

(Only hyperpigmented buccal mucosa is not a CI for plasty)

See Post Auricular Skin

P/A & Neurological - Spine / Motor / Sensory / foccussed

↳ SPC/PUC Status | encrustatn | hygeine

ORTHOPEDIC Deformity - ? Lithotomy

- UTI Chances after AUG → 2% % of Pelvic # having urethral Injury ~10% (

- Complete remodelling after repair of urethral Injury takes around 1 year so calibrate ~ 1 year

- Causes of failure of VIU → Cut too deep → extravasation → fibrosis
  - → Cut too Shallow
  - → Dense spongiofibrosis
  - → Big Size Catheter for long time
  - → Improper PUC Care → Scab → Infection → fibrosis
  - → Not doing Calibration

- Prediction of failure of VIU - Timing of recurrence (< 3 mo
  - → Palpate - hard Indurated bulbar urethra
  - → Sonourethrogram
  - → Cystoscopy - Pink / white urethra
  - → Stricture density (not able to pass 6F & IFT)
  - → itiology → iatrogenic (recur fast)
    Previous failed VIU → Proxi / Distil dan
  - → Multiple , > 1cm , Penile urethral Strictures

- DORSAL ONLAY vs. VENTRAL ONLAY

	DORSAL ONLAY	VENTRAL ONLAY
DONE -	In any urethra	- Never In Penile urethra [No Sp / Dive
Disadv:-	Close to sphinter, needs circumferential mobilisation; Bulbospongiosus Cut → ↓ Expulsion of semen, ↳ Post void dribbling	↓ Blood Supply - Can be done In bulbar urethra as bulbospongiosus mus. provide bed graft; • More risk of — Diverticula → Dribbl / — Necrosis → fistula
Adv:	less chances of graft Shrinkage; Useful In Reoperative cases also	

Goto case scenario written 1.1

REVIEWED
By ankush jairath at 5:25 pm, May 12, 2016

Case scenario 1.2

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new school of though → No attamp of RGU / PUC one attempt Should be done

If PUC went in → after 2 weeks do periurethrogram
↓
take it out ← If no extravasat

X-ray Pelvis – Pubic rami
Rotation # only occours if there is # at S2 ends

Why NV Injury is more common in # Pelvis

- Urethral Injury & Mal alignment
- Bladder Injury
- large hematoma ∴ In such cases we may have to wait for greater period of time > 3 months.

USG KUB is necessary in all pt. → R/O
- Stone < 10, 20
- one Kidney may be absent/ Scarred

Case scenario 1.3

AUG/MCUG → Never Capacity Comment

Cystogram plate → Significance

- ✓ See bladder neck / Internal Sphincter
- ✓ AP view Why? ∘ To see for displacement of Bladder neck ⊂ relation to Pubic rami,

High likelyhood of PN ↓ Cover ⊂ antibiotics { ∘ Pt who is on Catheter for 6 months ∘ any reflux or not ∘ Any r

* If prostatic ducts Extravasation is seen on MCUG
Any significance? → May develop Severe prostatitis
→ Give proper antibiotics

WHAT Intraop. Problem anticipat^{n} → • ✓ Not able to align Urethra
• ✓ Post op Incontinance (∵ of membranous) → completely wrong
✓ Gap is too much to carry out end to end anastomosis
✓ ∵ of Callus → bony fragments
✓ Excess mobilisat^{n} → ↓ Vascularity → → Short^{g} of urethra → Ventral Chordee
↗ Jeopardise of anastomosis Blood supply
• How much U can mobilise → Upto penoscrotal junct^{n}
• Tension @ anastomosis
• Rectal Injury • Bleeding
• Difficultly in find^{g} Proximal / Distil end
• Anastomosis to false passage

Case scenario 1.4

Suppose on Cystogram → Bladder Neck donot open Possibility? (4)

BN Stenosis / Young anxious pt. / PBNO ⇒ What next will you do

Strain / Relax / ∝ # / SPC Scopy / Rigid Cystoscopy / EUA

MCUG + An. Anaesth.

Gravity Cystogram c SPC ← Level of Anaesth: Should be deep

- other methods of visualisg Post. urethra → Put ureteric Catheter & dye, Bougegram, Cystoscope occlude BN → Vasography, MRI

- Progressive perineal urethroplasty → To Start at perineum & then progress proximally to do end to end

Post PUC removal → Pt not voiding (AUR)

1. Missed Stone / Encrustation on stone
2. false passage anastomosis → Create separate Bladder neck
3. Edema
4. Anastomosis not mucosa to mucosa (mal aligment)
5. undiagnosed BN Bags (FU) [forced dialator]

Pt may pass for Couple of days then had AUR

If U Keep PUC for ~~long~~ less period of time → Incomplete epithelisation

F.U. → 1 month → ~~urethr~~ uroflow [If pt asymptomatic / uroflow (N)

Restenosis → If anastomotic Stricture

long Stricture → total bulbar necrosis → Scrotal drop back

Single VN attempt

No need for MCUG from pt. point of view

to SC

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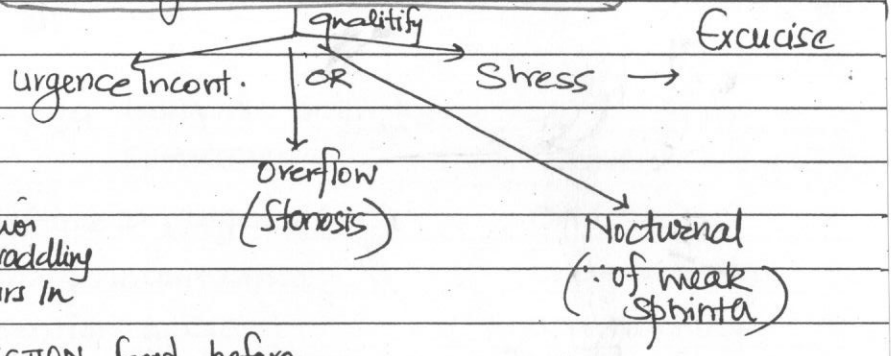
Case scenario 1.5

- Bone gauge & hammer for Periosteum elevat^{n} rather than Bone Chisel is used
- After Rerouting if total Pubectomy is not to be done then do (Prostatic mobilisat^{n} / Crural Plication) EVEN

(5)

U. → Pt having Incontinance @ 1 month



u Infior
ubectomy
↓
can do posterior
ctomy to ↓ waddling
which occours in
pubectomy

Side / Spatular

ERECTION Good before

But No erection after OT → very very less (< 5%)

y cally ∵ In # Pelvis → Bulbar artery is already gone
even U Cut Bulbar artery → Still.

Pre. In Sky Is MCUG finding

PFUDD - No defect in mucosa so its different from stricture

Reasonable Capacity on MCUG → If bladder occupies 2/3 of true pelvis

~~Relation of Bladder neck from Symphysis pubis~~

~~Double distract^{n} Injury (Type 4) → Role of MRI → If not available → Vasography~~

Co ~~mment on Callus on MCUG → midline / not~~ → Cannulate vas ↓ If in midlin then have to excise

Ro ~~le of Penile doppler :- Baseline, arterial velocity~~ (<25 → No therapeutic role)

~~nly In pat c ED If 25-35 ⇒ Penile revascularisat^{n}~~ (before definitive repair)

~~Is Neurogenic~~ Borderline m.c.c. Dorsal artery to inf. epigastric

Extent of bulbar mobilisat^{n} – upto peno bulbar junct^{n} (assess by putting hand up towards pubic Symphasis)

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Resident In Urology

Case scenario 1.1

Date:

Complication of Dorsal onlay urethroplasty

Early
1. Pericatheter purulent discharge → Suspect Graft necrosis & Infn
2. Hematoma from cut edges of bulbospongiosus
3. Wound Infection
4. Epididymo orchitis

Late
Restricture Diverticula ED (ejac. duct dysfn - more common)
Post void dribbling / Splaying → If urethral mus. integrity is lost

* Intermittent Clamping of SPC is not advised to maintain bladder Capacity, even with 1 year of SPC bladder capacity will remain same but Clamping ⇒ UTI ⇒ Problem

* For AUG → Knutsson / Brodney's Clamp
  6-8 F foley's c 5 ml balloon
  Hysterosalpingographic Catheter c 3 mL balloon

* HESITANCY INDICATES - BN Edema / Hypertrophy
* AUA update for Difficult urethral Catheterisation (2013)

failure of Catheterisation → 18F Coude Catheter → 12F Silicone Catheter → Guidewire

SPC ← NO / Yes
Guidewire: flex Cystoscope OR Blind
Yes → 16F Coude tip → 12F Silicone mod. tip ← 12F Silicone urethral [dialated]

- M.C.C. of DUC → Stricture → BN Contracture → false passage
- Blitz technique for Insertn of foleys over guidewire by puncturing tip c needle (20G)

Blue - Dr Sabnis
Black - Dr. Abhishek

PFUDI

Mechanism of Injury: loss of lateral squeeze, twist

H → 30 yrs, RSA, Not able to walk, B/L traction
Erection ⊕, No ejaculation, 1 child, Masta
Ex → Gait (N), Everything (N), SPC in Situ
Δsis → Gait able to

Should have done RGU at 1° Injury time

Which cases

One school of Thought:
- Single Gentle Attempt of Catheterisn
- OR
- Definitive → Exam → focussed Neurological examinatn

Oral exam → DO NOT SAY UPFRONT unless UC BXO

What are different Option in case of PFUDI
i.e. RGU/PUC vs SPC

- In DRE → Prostate Displaced ⇒ No RGU → Direct SPC
- Complex # → SPC No PUC
- H/o Passing urine → Attempt Catheter
- Hemotoma (Butterfly) → Significatn / Below UG diaphram → No PUC / only SPC

* Full Bladder Indicates either Partial or Complete rupture so just ∵ pt is in retentn, it doesnt Indicate anything

REVIEWED
By ankush jairath at 5:25 pm, May 12, 2016

r. Ankush Jairath
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Intonational Index of Erectile dysfunction

1-7	SEVERE ED
8-11	MODERATE
12-16	MILD-MOD
17-21	MILD
22-25	NO

SCORE (SHIM)

Confidence to get & keep an Erection

ECTION hard enough for Penetration

er Penetration how often U can maintain erection

w difficult is it to maintain erect^{n} to complet^{n} of Intercourse

xual Intercourse, how often was it Satisfactory for U

Case Scenario 2.1

Q Flab

Asopa

Dorsal onlay Brnd - Kulkarni

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Paraurethral ant. Stricture

57/M LUTS c 3 VIU c epid orchi 2 episode

AUR 6 months on SPC

Purulent D/C from meatus BXO Chang

PTCA on anti Coagulant, Circumcision

Smoker

Tt. option

- Why Stage urethroplasty
  ∵ Sign of Infect^{n} → Chances of Infection
- Perineal urethroplasty (If pt. reluctant)

Where is Infection? Distal bulb Paraurethral glands

M.C. Site of :→

* Gonococcal Stricture Common In Proximal bulbar level

as Paraurethral Glands are more there

* If on examinat^{n} meatus is (N) then Stricture like can't be BXO
* Iatrogenic Stricture → Donot say M.C. Site of PUC
  Cause of Stricture / (due to fricti^{n}) Stricture ← fixed & hang^{g}
* PUC Induce Stricture → Submeatus → Penobulbar → Bulbromembranous
  ∵ meatus gets Inflamed ∵ of Cont. fricti^{n}
  ↓ Narrow lu.

1-7 SEVERE ED

Case Scenario 2.2

Meatus → describe

Edges are friable, elastic, soft

wide

Even if it is wide, it may be Indurated not soft, Inflammed, hyperpig. clang patches

*White secreat" donot mean it is gross Infect", it can be urethral Secretion

Principle of lay open (Stage 1 urethroplasty) ⇒

- Commonest Site to put graft is midline → Better Support & tak

Disadv. of Buccal Mucosa	Adv. of Buccal Mucosa
Donor Site morbidity, Exposed to outside env. → thickened, Indurated, hard	- less contract", more resembly urethral mucosa,
Disadv. of Skin graft — You have to excise it again else u have to take proper post operative ↓ Keep moist put ointment	Adv. of Skin graft —
	— more area available
	— Donor Site - less morbidity
	— less contraction rate
	— If prepucial Skin is there ↓ Best.

Medial aspect of thigh/arm

Post auricular

Skin

1-7 SEVERE ED

Case scenario2.3

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* If U use Buccal Mucosa → Do early Stage 2 & narrowing
keep graft moist oral

* Checklist for Stage 2 → Prerequisite for Stage 2
  - Urethral Stroma
  - Graft bed – Scang Induration (thick hardness
    It has to be supple
  - Calibration / uroflow of proximal urc

* How to do Stage 2 → Principle of 2nd Stag

(a) Decide the size → from age of pt.
of future tube
⊕ Penile size

* In adult ⇒ 20F min size

So take a Catheter & measure Circumferen by putty. thread & then Close ⇒ To mea

(b) Put some tissue in bet Suture line & Skin

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1-7 SEVERE ED

Case scenario2.4

(c) Donot try to bring ~~meatus~~ urethra upto meatus → narrowing
So meatus has to be of adequate size, oval
So keep it a little hypospodiac urethra
but donot compromise size of meatus

(d) fine, monofilament, PDS, non braided
(e) No place for drain
(f) Skin Closure should be ~~c~~out tention

Suppose Skin is not coming → * Dorsal Penile Skin releasing Incision

* U may go upto whole shaft → depending upon amount of release u need, Dorsal Incision should be left open healing by 2° Intentn ↵

(g) Antibiotics (h) what are problematic area → Proximal urethral stroma site → Precautn Proximal Incision Should be like it should ~~be~~ not be causing narrowing neither it should not be deep else it will form urethral diverticulum

Complicat" → Bleeding / infectn
PUC → 16F, Silicon, x3 weeks → why?

Wilhelisatn & healing take 2-3 weeks ← why?
require significance strength.

* PUC → Silicon (VS) Siliconise latex
So ~~c~~time Silicone Coating can come out So for longer duratn all Silicone PUC

1-7 SEVERE ED

Case scenario 2.5

* Only epithelisat" tooke place in 48-72 hrs but to fil
Sufficient Strength so kept for 2-3 weeks

Not more time → as Forcign body itself. → Infection

Complicat → • Stenosis < Proximal / Distil

- Diverticula
- Ejaculatory dysfn
- Splaying of Stream } ∵ of No mm anterior pla
- Dribbling

½ of Spongiosum is replaced by tube ← • Chordee / Stenosis of urethra

- Painful erection
- Hair growth

If there is fistula but pt. passing good urine

↓

Thin Stream } What has gone wrong

↓

- Put finger & then pass
- See how is local area

- Gap in anastomosis
- Tention Sutures / the Infection

If everything is fine → Put DUC & direct it again

Case scenario 2.6

as If urine keeps on coming then - this never heal

↓

If still fistula Persistant then what to do ?
(If everything else is fine)

↓

Adv:- leak will ↑se if there is distal obstruct^{n}
So if leak ↑se then come Immediate
or Poor flow ↗

↓

Call after 1 month to see for flow & Calibrate distal urethra distal to leak to keep it open as when U plan to repair ~~dista~~ fistula distal urethra should be fine

↓

Principle of repair
- Multilayer non overlapping Suture
- Rent Should be Covered ī local Skin flap
If U just close rent → reoccour
- Adequate Circumscribed Skin ⊕ flap Should be created to put into rent so flap Should be augmented by vascularised pedicle flap

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* LUTS Pt-(obstructive), Causes of Extravasation on MCUG: Trauma (bladder/urethra rupture), Malignancy, Cath Induced i.e. iatrogenic, TB (active Stage ulcers → Deep → Rupture during/from bladder)

* LUTS after traumatic brain Injury:

SYMPTOMS	UDM
↑ day time ↑, urgency (M.C.)	OA (M.C.)
Urinary Incontinance	underactivity
Retention & CIC	acontractility

In Initial 5-6 months ⇒ Recovers as time passby

* Buccal Mucosa WHY? Tough & resilient, Resistant to Infection, tolerate moist enviornment well, Vascular/laminar plexus In lamina propia, Elastic, non hairy, easy to harvest, no major donor site morbidity.

* DORSAL ~ ONLAY (Barbagli): Require urethral Mobilisation
INLAY (Asopa): Not require urethral Mobilisat^n

Previous dialatat^n/VIU ⇒ urethra detachment from underly^g Corpora
May damage N. ⇒ Erectile dysfn ← Due to fibrosis ← becomes difficult
May damage Bulbar arteries

* Predictors of ED: 1. Diastasis of Pubic Symphysis
2. lateral prostatic displacement, 3. long urethral gap 4. B/L Pubic rami # or Malgagnie's #.

Case history-4 PUV/VUR

PUV/AUV

- 1st describe present C/C

Neonate	Toddler
- Excessive crying while voiding	Diurnal enuresis [Polyuria - defective conc. ability D.O. activity]
- Intermittent Stream	LUTS (Weak Stream, ↘, Nocturia Straining)
- fever, failure to thrive, poor o feed poor weight gain, recurrent vomitg Lethargic, poor mus. tone	Incontinance, Stone, CKD, UTI
- loin pain, Pyuria	Developmental milestone
	Constipation history
	Voiding Pattern → ? Holding manuv Lazy bladder

ANTENATAL HISTORY

Any prenatal USG, Urology consultatn, Intervention (Oligohydramnios, IUGR),

NATAL & POST NATAL HISTORY

1st/2nd order of birth of Child, Male : female, FT/Preterm
Delivery < vaginal / c.s., Immediate cry, 1st voided,
any obvious congenital deformity @ birth [undescended testis, Prune belly synd.]
@ birth - fascial appearance, respiratory distress (need for ventilator/ICU)
generalised / fascial edema
Any abdominal mass (Bladder / HN Kidney)

Antenatal History → mother abd distentn less than (N) fetal organs palpable from outside

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Date

Treatment history → any circumcision & releave of symptoms after that

Family history :- How is other Siblings

Immunisation H :- & Developmental history

Examination :- Irritable, lethargic, Playful
↓ Build & Nourishment
BP is must (as CKD) Heigh & weight
Pallor, Gait, Osteodystrophy
CRF - Pedal edema, facial puffiness
SKIN - Pale, pink, dry, moist, wrinkled

Ascites Mass ← P/A - ✓ Describe if any

	VESICOSTOMY	URETEROSTOMY
	- SIZE	
- SITE -	Midline — cm from Pubic Symphysis / Umbilicus	In Mid Axillary line — cm from subcoastal margin or Pelvic bone
- SURROUNDING SKIN -	Puckered, Scarred, excoriation dry, wrinkled, Scratch marks Draining Clear urine or not	

EG & ? P/R & Spine / Neuro exam

DD - PUV, AUV, VUR, Neurogenic bladder, urethral Polyp / Stricture urethral atresia ← B/L VUJ / PUJO → If B/L HN

SUTB testing UDT DJ/RCC/TCC

fever, diarrhoea, Vomiting, abd. pain, poor wt. gain → Infants ← VUR

PRESENTATION

Neonate: UTI, Antenatal HN
↳ fever, Loin pain, Pyuria
Cry, failure to thrive, vomitg, Lethargy, jaundice, Seizures

Toddler: Fever, Abd. Pain, dysuria
LUTS (both Storage + voidi
iteology → Meningiomyelocele (H/o back Swelling)
Neurogenic bladder [Neurolog illnes
Spine deformity / trauma

LUTS - U, whether b he wannago, hesi
Date In betn period un Clothes wet (⇒ D.O.) ↑ (N) time to mictu any Straini

H/o BOO → PU Valve, H/o Straining, poor Intermittent Stream
H/o Constipation, any Congenital deformity, Antenatal Hi taking oral fluids or not,
Complication history → Recurrent UTI
ARF / CRF
Developmental history
Previous Sx (Circumcision)

features of
↓
See 29 pa
Left Sco

Family history → Siblings Immunisation → ✓
Twins 100%. Older 11%. Younger 45%. Father → SON 66%.

G.E. → Height, Weight, BP
CRF - PE / Facial puffiness
P/A - Prune belly
] See degree of toxicity dehydration & ability take oral fluids

E.G → labial adhesion / hypospadias / Red Inflammed meatus
P/R - fecal loading, Anal tone, Perianal Sensath, BCR
Spine & Neuro Exam.
Gait
Gluteal fold Symmetry

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Date :

Height	Weight
BIRTH 50 cm	5 months double Birth wt.
1yr 75 cm	1 years triple
4·5yrs 100 cm.	2 years four
	3 yrs five
	5 yrs 6 times
	7 yrs 7 times
	10 yrs 10 times

Weech
Birth 3·25 kg, 3-12 mo = $\frac{\text{Age in Mo.} + 9}{2}$
1-6 yrs = (Age (yrs) × 2) + 8
7-12yrs = $\frac{(\text{Age (yrs)} \times 7)}{2} + 5$

* Why we put 6F 1FT & not 6F foley is bcoz ∵ bladder spasm which due to balloon ⇒ Urine Reflux

* 2 yrs - UTI Causes ∴ VUR, PUJO, Ureterocele, Duplex Moeity, Kidney Stone, Neurogenic bladder (Spina bifida occulta) → only f(n) obstruct^n → DSD / No LUTS / Poor flow ⊕ Still UTI

* Causes of Non f(n) C/L of Kidney In case of MCUG Showing U/L reflux
  - High grade reflux ⇒ already damaged Kidney & then reflux Res
  - Dysplastic Kidney

* In Case of high grade reflux ⇒ Dysplasia will be more [Can be true but not always] as defective Ureteric bud is the cause of renal dysplasia but it is not necessary that there always reflux

* Low grade reflux - UTI - Cause ?? Suggest some problem c bladder or outlet, any DSD, DO

Date

* VUR - Child on ab doing well @ 1 year but now started hav^g UTI or Simply Causes of failure of Med. therapy
  - BB Dysf(n) • Poor compliance to take dr
  - Chemoprophylaxis resistance • Insufficient dose
  - Improper hygeine during daefecat^n → So always tell parents how to clean fecal
  - In female child there is tendency for delayed micturi i.e. to hold back urine (social issues)
  - Dilated PCS System c Non f(n) Kidney → Doxy may not be Sufficiently Concen
  - SPA is good in Boys c phimosis & Girls c labial adhesions

* Indian Society Of Paed Nephrology - Revised Guidelines - 2011
  - Δ^{sis} of UTI based on +ve urine C/s & not only on leukocyturi
  - 1st episode of UTI < Infant → Detailed Investigat^n / Older → USG & DMSA (if ab^N) → MCUG
  - Recurrent UTI / VUR → all evaluated for BB dysf(n)
  - Grade I/II Prophylaxis until 1 year of age] if no BBdys
    Grade ≥ III " " 5 years of age]
  - Significant Pyuria >10 WBC/mm^3 In fresh uncentrifuge Sam
    Or >5 WBC/mm^3 HPF In Centrifuge sample
  - Sample Collect^n → Clean Catch mid stream, Contaminat^n mini by washing genitalia c Soap & water, Antiseptic wash & formed Phi Is not advised. In neonates & Infants → Suprapubic aspiration transurethral bladder Cathetrisat^n] → Processed c in 1 hour else s at 4°C upto 12-24 hrs. If suspect mixed growth (Lactobacilli/ent Repeat Culture

		Probability
Supra Pubic aspirat^n	Any no	99%
Urethral Cathetrisat^n	>5×10^4 CFU/mL	95%
Mid Stream Catch	>10^5 CFU/mL	90-95%

Date :

- features S/o underlying Structural Ab(N) - Distended bladder, Palpable enlarge Kidneys, Phimosis, Vulval Synechiae, P/R - fecal matter, Patulous anus (Neurogenic) Incontinance, Previous Sx on UT/ARM/ meningiocele
- features S/o BBD - Recurrent UTI, Persistant Highgrade reflux, constipation, Impacted Stools, holding maneuvers (Vincent curtsy, Squ[illegible]), voidg <3 or >8 times/day, Straining or poor Stream, Thick bladder wall >2 mm, PVR >20mL, MCUG - Spinng top deformity.
- Children < 3 months or c complicated UTI ⇒ HOSPITALISE
- 3rd Generatn Cephalosporin (Ceftriaxone IV or Cefixime oral) is preffered drug to start empirical T/t of UTI
- Simple UTI & Children >3 months → Can be T/t c oral drugs
- Duratn Infants & children c complicated UTI - 10-14 days
  Rest - 7-10 days

1st UTI

Age < 1 year	1-5 yrs	>5 yrs
USG, MCU DMSA Scan	1st: USG/DMSA If any ab(N) MCU	1st USG If ab(N) MCU & DMSA

USG soon after UTI Δsis, MCU 2-3 weeks later, DMSA 2-3 months later

- Prevention - Adequate hydratn, Double voiding frequent voiding, Avoid Constipatn
  Toilet trained - Regular & volitional low pressure voiding to completn
  Circumcision,
  Address BBD → 1st evaluate by fVC (2-3days), Watch urine Stream, PVdribble
  UDM if necessary, exclude any neurogical cause, IFOAB - antich.
  If ↑PVR - Timed, double void, CIC

Date :

- Antibiotic prophylaxis → Idea ← Effective, Non-toxic, Shouldn't induce bacterial R, No Side effects, Shouldn't alter comm
  Dose Is 1/4th to 1/8th of therapeutic dose

COTRIMOXAZOLE	1-2 mg/Kg/day	Avoid <3 mo, G6
NITROFURANTOIN	1-2 mg/Kg/day	Avoid <3 mo, G6PD, CK
CEPHALAXIN	10 mg/Kg/day	DOC 1st 6 mo.
CEFADROXIL	5 mg/Kg/day	alt. In 1st 6 mo.

Duratn:
- < 1 year ⇒ while awaitg Imaging after UTI e/o
- VUR (I/II) - Until 1 year (III/IV) upto 5 years, If BE Cont > 5
- frequent febrile UTI (3 or more/yr) even if UT → (N)

- Not advised if pt having UT obs (PUV), urolithiasis, Neurogen or pt. on CIC
- Presence of asymptomatic bacteriuria in a pt. previously treated R UTI Should not be considered as recurrent UTI & not Indicatn fo

- There Is no Indication for Immediate surgery, all pts are t be manged on prophylaxis 1st

In females

- If there Is H/o reflux In childhood, Get an MCUG @ puberty
  Explain relative if reflux(+) ← 2 School of thoughts
  Go for Intervent[illegible] in all cases OR Wait → let pregnancy oc & Give Ab if PN(+)
- 2 febrile UTI (breakthrough) In < 1 year ⇒ Indicatn for Sx
- Reflux In 7 yr Old Child i.e. late presentation / 1st UTI @
  2 things
  See Kidney morphology
  UTI can be ∵ of Some bladde pathology, so & can cause reflu temporarily

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Date :

* failure to thrive : State of undernutrition Indicat[s] Insufficient weight gain or Inappropriate weight loss.

* MCUG - Always ask for Plain film, If higher grade reflux IV/V even if U Know how much dye Is Instilled never comment on bladder capacity.

* (N) S. Creatinine

S. Creatinine	Age
0.32	2½-2yrs
0.43	6yrs
0.5-0.7	12yrs
0.7-1	16yrs

CA Testis

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CASE SCENARIO 3 | PUV

- ~~XXX POV~~ - 6 months old
- No CRF features
- O/E

Since 1 month poor flow
fever 1 week (only 1 episode)

DD of Poor flow → 1. PUV / 2. AUV / 3. Urethral Polyp / 4. Bladder diverticula / 5. ureterocele / 6. Neurogenic bladder / 7. VUR ± UTI

Urine R/E - +1 proteinuria, 5-6 RBC, 15-20 WBC

Next USG → Bil mod HUN SG 0.4

What else In USG U See - Bladder thickness @ volume
Bladder diverticula.

* How to differentiate bet[n] 1°/2° reflux *

2° Reflux: Why Can't it be a 1° reflux ⇒ U have to Check at the
- Flow @ no UTI: time of no Infection (No UTI) how Is the flow → If flow poor then 2°
- Post urethral dialatation: See for dialatation of posterior urethra → If HUN Is
- Ass. LUTS: there then it means there Is significant obstruction so
- & higher grade reflux: then HUN ⇒ 2°

In higher grade reflux there can be poor LUTS associated

Next X-ray KUB → OK

Next MCUG - Diverticula has to be Δ[ed] on lat. film

as In AP view ◯ ~~layering effect of contrast so does not mean~~ diverticula.

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No Reflux on (L) Side Grade V reflux on (R) Side

* MCUG- Pooling of contrast @ Submeatal region
↓
DD
Meatal Stenosis | Phimosis

Next → ~~DMSA~~ ~~DTPA~~ Renogram (as Child Is Clinically ok)
↓ i.e. Investigate further
If pt. was hav[g] failure to thrive ⇒ PUV fulguation

DMSA → (L) 99% (R) 1% → ∵ of VURD seen in 13% Patients
↓
Why U expecting it
∵ PUV a/w Renal dysplasia / Parenchyma ab(N) & not ∵ of VUR / Infection

Plan of action : Cystoscopy c PUV fulguation c Circumcision
How will U do
Paed Scope 4.5F • laser • bugbee • hook • Suprapubic antegrade fulguit
• How will U decide which Scope to be used → 6F Cystoscope can go in newborn but why 4.5F in many then Is

CA Testis

preterm child → 4.5F Paed. has come but problem poor vision / channel small

- In 6F ⇒ Bug bee will go (as 3F Channel)
- Else do via Perineal Urethrostomy as it admits larger scopes

↓

Post procedure just Close it heals well

- Where U will take Cuts - 5 & 7 o'Clock
  PUC ⊖ 1/2 days
- FU @ 1 month - Symptoms / Visual flow / cont. prophylactic ab., Give anticholinergics (∵ these pt. has high pressure bladder)
  @ 3 months - MCUG, only in Selected Cases
  Reasons → Not done in all Cases
  1. To see Reflex
  2. To see regression of post. urethra
  3. ↑/↓ BN Hypertrophy
  4. Trabeculat ↑/↓

No use to see reflux in 3 month

Can be seen on USG, No need for

Irrelevant

POINTS

↓

what U will c by scan ↑/↓

So,

Q When U will advise early MCUG → @ 3 months In case of neonatal fulguation

- If Child flow is not Good
- If Child gets recurrent UTI
- If USG persistant dialat" of post urethra

Q. (So all obstructing symptoms has to regress)

↓

In partial fulguat" of PU valve flow can Improve but on USG there is dialat of post urethra

- ↑ing HUN/HN

Regular FU MCUG → 6 months / 1 year depending upon Institute to Institute (If everything is fine)

→ But why U want to do it even if Child is doing well → elective MCUG

1. To ascertain Completeness of fulguation so obs. changes might use
2. Whenever u are using current there is always a possibility of Stricture formation

CA Testis

Q. So PUV fulguration after PUC⊖ ⇒ Child Crying, drops of urine — What are possibility

1. Clot
2. Edema
3. Incomplete fulguration
4. Constipation
5. Spasm of Sphinter

Q. After PUV fulgu PUC⊖ Child passed urine, OK ~~after~~ for 7 days, now Crying & poor Stream

↓ UTI, See S. Creatinine

↓

Put IFT, ab, proper evaluation

Same Child In Case ∵ S.Creat · 4·5

So ① Drain the bladder
② Electrolyte
③ Serial Creatinine

2-3 day came down to 3·5

↓

↓

How long will U ~~wait~~ wait → If

Supra vesicle diversion	Vesicostomy
↓	↓
Tostons meter	• Drain bladder, so bladder pressure zero
↙ obstruct ↘ Brain Infect^{n}	So whatever obs. above is functional obstruct^{n}
Disadv- M/m on both side	• Not good in c/o dialated tostous meter → Stagnant urine → persistant infection
No urine goes down	
↓	
dysf^{n} bladder, so U have to reneuse it ~in 1-3 months	• Unlikely to cause dysf^{n} bladder
	• Easy to manage – Sigle Side
So do Sober^{s} meterostomy on one side so that some urine goes down	Drain very well in smaller child ∵ as the child grows bladder will become pelvic organ → residual urine as vesicostoy done at dome

Indication of UDM before Closure of vesicostomy

1. Small Capacity bladder
2. Grossly trabeculated bladder
3. Spinal dysmorphism

Complication Of Vesicostomy Closure

1. Inadequate drainage
2. Inadequate fulguration
3. Small Capacity bladder
4. Detrussor Instability
5. Poor Compliance
6. Leakage

In a neonatal fulguat^{n} do early MCUG @

* If bladder drainage after, Child Improves so doing vesicostomy U expect it will going to improve further

So U have to see c PUC / bladder drainage whether ureter (lower) size has decreased / not

2ndly see whether child improving or not c bladder drainage (S.Cr ↓, failure To thrive ↓ing) → vesicostomy is going to help.

(N) FU In PUV fulguation → but persistant HN is there (rest everything is gud), it is ∵ of 2° Changes In bladder

1. Bladder neck HT
2. Non Compliant bladder
3. Incontinance Is there / not / See capacity (hydrodistention)
   LUTS

* If U do SOBER'S Ureterostomy ~ Closure 1 year of age
  Vesicostomy ~ 3-4 yrs of age (may be early)

CASE HISTORY - 5

Date :

CA Testis

H/o Scrotal Swelling / Scrotal fullness

- Side
- Duration
- ↑/↓ In Size (rate of growth)
- Where appeared 1st (groin → scrotum s/o hernia)
- Relation c̄ lying down / cough
- Ass. c̄ pain / decreased scrotal sensation (Infart, Hemorrhage; Pressure atrophy of neuronal endings bet" growing mass & albuginea)
- Vague discomfort / testicular heaviness

Reteroperitoneal Mass / Abdominal Swelling or lump

- Palpable mass, Site, Duratn
- Ass. c̄ abd. pain → flank - ureteric obstructn
  → Back - N. Inv. / Psoas Inv.
- Ass. c̄ lower limb edema (IVC compression)
- Ass. c̄ GI symptoms

Metastasis - Pulm - Cough, Chest pain, hemoptysis breathlessness

Gynecomastia (2·7% of NSGCT)

Supraclavicular L. nodes (Swelling)

2° metrasis (1° being prostate, lung, melanoma, B, Colon)
flank pain, hematuria, Skin lesion, bowel disturbance

-ve history → LUTS , DYSURIA , FEVER , UTI
Previous trauma , Impotency , loss of libido (R/o Leydig cell tumor), & STD
H/o undescended testis < 4-6 times in I/L testis
1-1.5 times in C/L testis

PAST HISTORY :- TB / FILARIA / DM

PERSONAL :- H/o hypospadias / crypto / Ambigous gen @ birth
Children , Married , Family complete
Smoke , alcohol , addict"

MEDICAL :- Any scrotal / Inguinal Sx → Changes draining area

Family :- Brother ← (8-12) (2-4) → father
Maternal H/o alcohal / drug abuse
Personal History 1½ times risk Tes

Examination :- Performance Status (ECOG / KPS)
LAP (lymphoma , advanced NSGCT)

SYSTEMIC - CVS / RS / CNS

Gynaecomastia
(Leydig Cell tumor)
2% Incidence , Mostly NSGCT
↑hCG ↑E_2 ↓Androgen

P/A → INSPECTN / PALPATN / PERCUSSN / AVSCULTATN
INGUINAL REGION

EXTERNAL GENITALIA Hypospadias / Ambigous genitalia

INSPECTION → Scrotal development , rugosity +/-
Scrotal sac empty on any site [undescan testis
fullness → Site , Size , Shape , Number
relation to testis
Skin over Surface - Smooth, bosselated
Scar , Sinus, ulceration , discharge,
Impulse on coughing
Penis → Midline , prepuce , Meatus, BXO Chang
Circumcised +/-

Palpation :- → Swelling - Site , size , Shape , Consistancy
Surface - Smooth , bosselated
Tenderness +/-
Relat" of swelling to testis
If swelling is testicular then palpate epididymis
Cord structures , get above the swelling
FLUCTUATION / TRANSLUCENCY / REDUCIBILITY
VARICOCELE / COUGH IMPULSE

1st Temp & Sensation

DD
Gaitalis | TB | Mumps

C/L testis

DRE

CASE HISTORY 6

GUTB

Date :

C/C

Kidney & ureter : flank pain , mass , hematuria , clot colic , Pyuria (Gross 10% / Microscopic 50%)

Bladder : LUTS (Storage > Imitative) >50%
(fixed 2l/volume) Incontinance (thimble bladder)
(30%) Hematuria , Pyuria (Sterile 25%)

Prostate : Hematospermia (Incidence 10%)
Chronic pelvic pain
Abcess (fever, Dysuria, UTI)

Urethra : Stricture , Passage of caseous material (<5%)

Epididymus : hematospermia , swelling , pain , Infertility

Testis / Scrotal : Mass , pain , sinus , Recurrent scrotal swelling

Penis : Nodule , ulcers

Adrenal (6%) ; Addison's s/s

Female : PID , Infertility , VVF ,
Menses (amenorrhoea)

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Date :

Constitutional S/s - (20%)
Fever (PUO) (evening rise, night sweats)
loss of weight / apetite, anorexia
Generalised malaize, weakness,
S/s Renal failure (facial / pedal edema)
cough / expectoration, Arthralgia,
Swollen nodes / discharging wounds
Sinus / Non healing ulcers / Nephrocut fistula

Past H/o TB : When Pulm TB? Any other organ Inv.
Severity of symptoms, Tx detail, declared cured / Improvment of symptoms, durat^{n} between present episode & last episode

H/o Chr. illness : DM | HIV | HTN | CKD | Malignancy | Immunosup

Family history : Infertility, other members having TB & Rx

female : Mensural history

Male - Intercourse - Possible (Sexually active)
Ejaculatory volume (Scanty, fed, (N))

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Date :

Examination - Built & Nourishment
P^{-} / Generalised LAP / PE / FE

CVS / Respiratory / CNS / P/A
(SPINE → Imp)

External Genitalia :

MALE	FEMALE
P/R - SV (Palpable - early stages) (Recto urethral fistula (Palpable) HIV)	PID
Prostate - Hard / Nodular / Small / abcess (boggy / enlarge / tender), Calcificat^{n} (TRUS - hypoechoic)	Infertility
	Mensural Irregularity (oligo or amenorrhoea)
Penis - ulcer (Pea Size nodules (Cavernosa) *), Meatus (Beefy Redness)	P/V - Ulcer
Stricture, fistula	VVF
Disfigurement, Urethrocut, Bulbar enlargent	Vagina mucosa - Pale
Epididymus - Enlarge / Tender Craggy / Nodule	Cervicitis - Tenderness
Vas - Beaded → (Chr. Prostatitis, Epididymitis, Post NSV, Epididymal Cyst Sperm granuloma, Chlamydia Infect^{n}, Epididymal tumors)	
Scrotum - Testis (detail)	
Scrotal Sinus / abcess	

Epididymus & testis separately palpable or not

Perineum - Any Sinuses

DD
GUTB / OAB / PBS /
CA bladder / IC /
Bladder Stone /
Neurogenic bladder
BEP

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frequency

Small Capacity	OAB	PBS
• Same time Interval & Same volume	Different time Different volume	
• Pain ∵ of loss of elasticity Pain ← ↓ In CC	No Pain on holding urine (only urgency)	Pain ⊕⊕

Severe frequency → Pooled sample → Refrigerate

CT IVP → To see status of other Kidney also as USG may be Ⓝ, Calyx changes, ureter changes which might be missed (ureter edema of wall, periureteric edema) Cavitory lesion

1st Sign → Fuzzy Calyx → Motheaten Calyx → Spastic Calyx [also In ADPKD]

When to Stent before Start of AKT → Periureteric edema [Persistant Contrast In lower ureter] ureter wall thickening [aperistalsis, In axial sections], ↑S.Cr [Solitary Kidney as such is not an Indication for DJS]

In GUTB ureter being both Refluxing (pulled up, more common) & obstructing (fibrosis, rare) is very rare

In SFK if U are not putting Stent → Regular 1 monthly FU
In Intensive Phase { for HN (even if asymptomatic)
Get S.Cr. at each visit

Cat 1

For all "new" pulmonary (smear positive and negative), extra-pulmonary and other TB patients

2H3R3Z3E3/4H3R3.

Cat 2

All "relapses, treatment after default, failures and others" are treated with the regimen for previously-treated cases:

2S3H3R3Z3E3/1H3R3Z3E3/5H3R3E3.

MDR-TB (HR)

6(9) Km Lvx Eto Cs Z E/18 Lvx Eto Cs E

This regimen comprises of six drugs— kanamycin, levofloxacin, ethionamide, pyrazinamide, ethambutol and cycloserine during 6–9 months of the intensive phase and four drugs—levofloxacin, ethionamide, ethambutol and cycloserine during the 18 months of the continuation phase.

XDR-TB: HRF + 2nd line Injectable

6–12 Cm, PAS, Mfx, high-dose INH, Cfz, Lzd, Amx/Clv/18 PAS, Mfx, high-dose INH, Cfz, Lzd, Amx/Clv

The "intensive phase" will consist of seven drugs—capreomycin (Cm), PAS, moxifloxacin (Mfx), high-dose INH, clofazimine, linezolid and amoxiclav. 6-12M

The "continuation phase" will consist of six drugs—PAS, moxifloxacin (Mfx), high-dose INH, clofazimine, linezolid and amoxiclav. 18 M

In enlarged / dialated ureter / HUN → To see whether ureter refluxing → Wrong Concept

- Scopy before augmentation ? → Exact Capacity, To see for any active lesions / ulcers / tubercles / Inflam area's ⇒ if present defer augmentat" for some more To see for U.O. morphology (many times U.O. not seen d to fibrosis). So preop stenting might not be possible

- No need for NU In all Cases

mall Capacity
me time Interval
Same volume
n :: of loss of elasti
Pain ← ↓ In CC

ere frequency → Pt
IVP → To see stat
(N), Caly
be missed
Cavitory le
1st Sign →

Non DOTS Regimen ↓ RNTCP

2 (SHE) + 10 (HE)

Non-(R) containing regimen

For e.g. Pt c AE c (R)/(Z) OR

New pt. who refuse DOTS

FOR HIV - Same regimen + Co-trimoxazole + ART

DOSAGE - IF wt. < 30 kg ⇒ A.T. Body wt.

H	600
R	450 + 150 (For pt. > 60 kg)
Z	1500
E	1200
S	750

RED - NEW
BLUE - Previously treated

Suspect MDR-TB ⇒ All pt. failed 1st line T/t, All previously T/t pt, HIV-TB, All Pulm TB hav MDR-TB contacts, Smear +ve on FU

Δtic modality of choice → NAAT (1) Liquid Culture (2) + Line prob Solid Culture (3) + assay [also In ADPKD]

n to Stent before Start of AKT → Periureteric edema [Persistant Contrast In lower ureter]
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SFK if U are not putting Stent → Regular 1 monthly FU
In Intensive Phase { for HIV (even if asymptomatic) Get S.Cr. at each visit

REVIEWED
By ankush jairath at 5:25 pm, May 12, 2016

Condition In NFK where Nephrectomy is must
- Cavitory lesion
- Calcified lesion (Dystrophic Ca^{2+} - No blood supply to lesion)
- MDR-TB

- AKT acts through hematogenous route not Through urine So will act in NFK on bacilli

- Relmplant along c augmentat^n ⇒ only if obstructive ureter & not refluxing ureter

- Role of MCUG :- Due to differential fibrosis after Start of AKT before U decide for any surgery, to see Irregularity, distorted bladder wall, any outpouching / diverticula In enlarged / dialated ureter / HUN → To see whether ureter is refluxing → Wrong Concept

- Scopy before augmentation ? → Exact Capacity To see for any active lesions / ulcers / tubercles / Inflamed area's ⇒ if present defer augmentat^n for some more time To see for U.O. morphology (many times U.O. not seen due to fibrosis) So preop Stenting might not be possible

- No need for NU In all Cases

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Date :

Principal of Augmentat^{n} – 1. Detubularisat^{n} → If not → Peristalsis (+) / Incontinance
2. Adequate Capacity 3. Adequate / Good Compliance (Intestine Shortened)
4. Spherical Shape (↓ Contraction, max volume for SA → ↑ Capacity / ↑ Compliance)
voiding by add pressure → equal distribut^{n} of
ensures complete empty^{g} ← applied pressure

* Pyuria Is Sterile, acidic (25%)

* Cystoscopy & Biopsy Should be done only after 4 weeks of ATT

* Urethral Stricture 1st SPC + AKT → definitive or Balloon + AKT

* Leak On MCUG In case of GUTB : M/m → PUT PUC + AKT

Again access leak ← Cont Intensive Phase AKT ← If leak Still present ← 4 weeks

(+) Scar Bx MDRTB? (−) PUC + wait for LUTS If any → Improve → FVC / No Improv → Plan for Augmenta^{n}

* Indicat^{n} for Cystoscopy c̄ Biopsy → Pt not Improving c̄ AKT / Elderly pt. c̄ hematuria

CASE HISTORY 7 - NEUROGENIC BLADDER

Mr/Mrs) _____, a ___ yr old Male/female from ____ a _____ by occupation has come with Chief Complaints of

Compl.

1) LUTS Frequency, urgency, urge Incontinance
2) Incontinence, nocturnal enuresis
3) Retention, Sense of incomplete evacuation (A) on Chr. / Chr. retentn
4) Bowel disturbances → Constipation, fecal Incontinence
5) Gait disturbances, paraplegia (etc)
6) H/o ~~Signs~~ of UTI, renal failure.

HOPI

Compl.

- LUTS → elaborate H/o (X) obst, Irritative (elaborate in detail)
  - Hesitancy, Slow intermittent stream, post void dribbling, Straining, Sense of incomplete evacuation, Frequency, urgency, nocturia,
  - H/o incontinence → type .. Continuous, urge, overflow, stress (X)
    - Amount of urine → soaked
    - Amount of urine passing in between
    - Continuous / Intermittent
    - Day period inbetween
    - Any pad usage → quantify if yes
    - Daytime & nocturnal → quantify
    - Nocturnal enuresis.
    - Impact on QOL.
  - Voiding pattern In between

Frequency
Since when
No of voids Day/Night
Volume of each void (largest void)
Bothersom

Voiding
Poor / (N)
Staccato → delay In Starting
fractionated → Intermittent

Date:

STROKE – HTN / Coagulopathy / Drug / Aneurysm / AV-Fistula

TRAUMATIC BRAIN INJURY

SPINA BIFIDA

PARKINSONISM * – Tremors | RIGIDITY | BRADYKINESIA, mask like face, ↓eye blinks, Stooped posture, Bradykynesia, micrographia, Soft speech, sialorrhea, Tremors (4-6 HZ, Pill rolling) lead pipe rigidity, cog wheel Gait - Short steps, Non-motor → Dep / anxiety, loss of smell, ~~MSA~~ Sleep disturbance, AUTONOMIC DISTURBANCE - orthost. Hy, excessive sweats, constipatn, urinary urgency, frequency,

AD – Memory loss (Gradually progressive) → Keeps trait of finances, lost on walk/driving, Language Impaired 1st naming Then Comprehension then fluency, Apraxia, Visuospacial deficit → Interferes c dress eats ~~CEREBRAL PALSY~~ Capragas Synd → Caregiver replaced by Imposter, Nighttime wanders / shuffling gait (but NO TREMORS)

MS (Young, Mostly) ① - objective ab ⓝ of CNS ② Involvement must represent predominant dis. of white matter ⓐ Pyramidal tracts ⓑ Cerebellar, ⓒ medial long. fasciculus ⓓ optic N ⓔ post. Columns ③ ~~DIS~~ MRI lesion → >3 mm dia, 4 lesion Inv. white matter ox 3 lesion if one is Periventricular ④ Clinically → ≥ 2 Separate episodes, each last⁹ 24 hr / more, occours atleast 1 month apart, gradual progressn ~~Spina bifida~~ over 6 months (atleast) ⑤ Pt neurological conditn Can't be attributed to any other disease CF Excertise Induce weakness, Spasticity (esp. Legs), optic neuritis, diplopia, ~~DM~~ Cognitn dysf(n) → memory loss Depression, fatigue, Sexual dysf(n) Vertigo, Nystagmus

Ancillary → Heat Sensitivity, Electrical Shock like sensat induced by Neck flexion (Lhermitte Synd)

CEREBRAL PALSY

H/o any Retention → Acute / Chronic – Since when – Amount of volume drained (12)
– TWOC / not – Urine Character.
→ Management → Catheter / CIC. → how long.
CIC right? ↳ detail H/o.
Associated patho: → any preceding event (trauma, Surgery etc)

• H/o bowel disturbances → detail H/o → Constipation, [Bristol Stool index] faecal incontinence, foiling, frequency, any relation to Micturition any Rx for this.
BOWEL

Gait • H/o. Gait disturbances, difficulty in walking, lower limb weakness.
OT

Learning disability • H/o Learning difficulties @ school, attention deficit.] if Young age.
• H/o Milestones attainment, height & weight develop, teeth up, failure to thrive
Sexual • H/o Sexual intercourse, erection, ejaculation → Adult.

Compl. H/o recurrent epididymoorchitis / CKD / Stone / hematuria
UTI CKD • H/o dysuria, UTI, fever, abd pain, loin pain, lithuria, hematuria
• H/o facial puffiness, pedal edema, lethargy, ↓ output, nausea, Vomiting, anorexia.

Etiology: H/o Trauma → when, mode of injury, Course of Rx, Recovery, D/C on pc
TRAUMA H/o occult dysraphism → Childhood history, growth & dev
H/o delivery (type, birth weight, imm neonatal period) Neuro Sx Intervent^n, Neuro Sx deficit, back swelling
any compl / pathology @ birth
• any Surgery in the neonatal period (post op. period)
• any instrumentation

SURGERY H/o any trauma, Spine Surgery
H/o APR / Radical hysterectomy

Past H/o:
• H/o DM, HTN, COPD, TB
• H/o any Surgery or intervention
• Similar Complaints in the past

Old ← CVA, DM, PD] sp Hist^y
Multiple System Atrophy

Young - Multiple Sclerosis

MSA → Mean age 60yrs
S/S → Autonomic failure
Urinary → ✓ , Orthostatic hypotention , Chr. constipation
Parkinsonism ✓ Cerebellar ataxia ✓ Pyramidal → Babinsky ↑ Reflexes

Sporadic , progressive , adult (>30yrs) onset disease

TM →
Inclusion criterion → 1. (S) (M) or Autonomic dysfn attributable to spinal cord (2) B/L S/S (may be asymmetric) (3.) Clearly defined sensory level (4.) Exclusion of extra-axial compressive etiology by neuroimaging (CT/MRI/Myelography) (5) Inflammat of spinal cord demonstrated by CSF Pleocytosis / ↑IgG / Gn enhanc

Sudden onset of lower back pain (→ may radiate down to LL), mus. weakness, clb (N) → Numbness, Tingling, Burning
Sensatn in toes & feet → Paralysis , urinary retentn , loss of bowel control , headache , fever , loss of apetite
Bladder → Incontinance, Urgency , frequency

Drug H/o: → Drug allergy , Drugs used for this condition

Personal H/o:
- Diet
- Smoking / alcohol addiction

Female: Menstrual, Obstetric H/o.

Family H/o: H/o spinal dysraphysm
- Married, children
- Social H/o

folic acid 400 µg/day Start 2 months before conceptn

H/o Maternal DM → Sacral agenesis

Summarise H/o:-

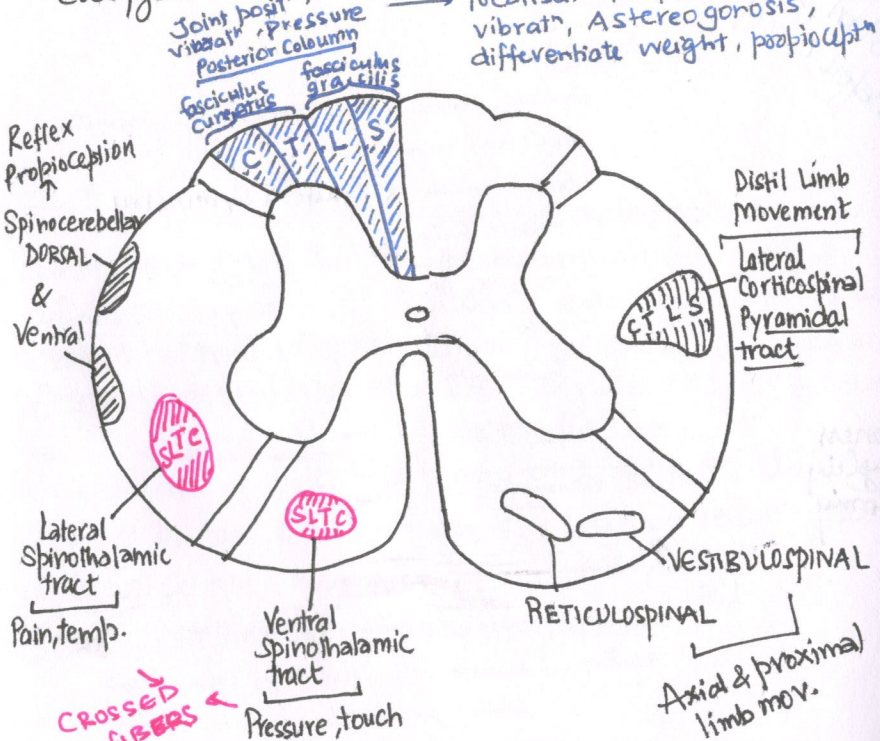
Examination
- Conscious, Oriented (time, place, person), Cooperative
- Built and nourishment
- Gait & posture & Gluteal Symmetry
- Height & Weight (appropr for age → in children)
- Temp, PR, BP, RR
- Pallor, Cyanosis, jaundice, L/N pathy, pedal edema
- Facial puffiness, Signs of CKD [dry skin, brittle nails]
- If paraplegic, bed ridden [bed Sores]

Systemic Examination
- CVS, RS → NAD.
- P/A:
  - Inspection → Shape, umbilicus, fullness, Quad Mov, Scars, Sinus
  - Palpation → tenderness, Mass, HS Megaly, Organomegaly, Bladder - palpation +/-
  - Per/Anus → Normal , Inguinal region → hernial Orifices → Free.

Spinal Cord level	Corresponding Vertebral body
Upper Cervical	Same as cord level
Lower Cervical	1 Level higher
Upper thoracic (1-6)	2 level higher
Lower thoracic (T_{7-9})	2-3 level higher T_{10-12}
Lumbar	T_{10-12}
Sacral	T_{12} - L_1
Coccygeal	L_1 over sacral coccyx

CERVICAL add 1
T_{1-6} → Add 2
T_{7-9} → Add 3
T_{10} → 4-2
T_{11} → L_3-4
T_{12} → L_5

uncrossed fibres
↑
L_1 → loss of fine touch, tactile localisatn, 2 point discriminatn vibratn, Astereogorosis, differentiate weight, proprioceptn



(13)

External Genitalia:- [Female – See in CKD & Stone chapter]

penis → Midline, prepuce, Meatus, Circumcision +/-
· leakage of urine
· Skin excoriation
Scrotum → Rugosity, development.
Both Bx testis → (N).

DRE:-
· Anal tone → (N)/Lax
· perianal sensations
· BCR – Patellar (S234)
· formed Stools [hard, Soft] fecal loading
· prostate.

Back & Spine:-
· Scars, deformity
· defect → palpable +/-, tenderness.
· any swelling (occult Spinal dysraphisms)
· Sinus → tuft of hair, dimple, swelling,
· Coccyx palpable (s/o Sacral agenesis)
· Gluteal cleft is (N) and symmetric.

Neurological examination:-
· Gait, higher function → memory, speech

I. Sensory / Motor examination

(a) Spinal Sensation → Closed eyes examination for sensory → In all the dermatomes

1. Ant Spinothalamic → Crude touch
2. Lateral Spinothalamic → pain (Pin prick, deep → Nail squeeze) / temperature
   Cross in Spinal cord.
3. Posterior Column → vibration, position, joint sense → Cross in medulla
   [Lemniscal System] Hold the base of great toe

128 Hz T. fork
Med/Lat Malleoli, tibial tuberosity, ASIS, lower end of radius, elbow, clavicle
Nose finger
finger to finger
Ankle over Knee

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~~Spina bifida~~ PD ↑ Anxiety / Thyrotoxicosis ↑

TREMORS → Static / Kinetic

(4-5/sec) Coarse / fine (7-10/sec)

Does not ↑ at the goal pt of any action | Appears at Goal pt of action

CHOREA - Rapid, jerky, nor repititive, quasipurpose, involuntary movement (HOW TO ELICIT → ASK pt. to raise up hands over his shoulder & maintain the posture)

CHARACTERISTIC → HYPOTONIA (Extrapyramidal disorder)

Ask pt. to grasp or squeeze examiner's hand (MILKING GRIP)

Knee jerk → Pendular mov.

Fasciculatn → LMN lesion

Sacral sparing

Preservatn of pin prick & temp sensatn in Sacral dermatomes (S_{345})

Sign of Intrinsic Cord Compression ≤ damages most of spinothalamic tracts while sparing placed laterally

Vs

Saddle Anaesthesia

loss of sensatn in lower sacral segments → loss of leg reflexes & Sphincter Control Indicated major lesion of Cauda equina

* Beevor Sign :- T_{10} Segment level → Intact upper abd reflexes & absent lower abd. reflexes

4- Dermatomes: T_{10} → umbilicus ; L_1 → Inguinal region , L_2 - thigh, L_3 - Knee L_4 → Medial leg & Foot L_5 → dorsum of leg & foot.

S_1 → lat foot + post lat leg & thigh S_2 → post Medial leg & thigh

$S_2S_3S_4$ → perianal.

Graphesthesia — Recognise Letter/no purely from feel of its shape & size — Stereognosis

I) Cortical Sensation :- point Location, 2 point discrimination, ↘ c head of Pin

II) Motor examination → Corticospinal.

1) Bulk - fasciculatn

- See for wasting (Flabby) / hypertrophy (Firm)

Separatn: Finger Pulp 3-5mm, Palm 2-3cm, Sole 4cm

leg / foot dorsum 5cm & back

Proximal Vs distal Vs both.

Locate from olecranon ↖ UL ← a) Circumference - prox → 18cm abv patella lip beside; Distal → 10cm below tibial tuberosity

b) palpation → Flabby / firm.

Degree of tension in muscle when at Rest

2) Tone - Muscle tension @ ~~rest~~

Hypertonia — mus. Soft to palpatn — Hypotonia

Inspection & palpation → prominent & firm, STIFF — pendulous & flabby

↓ed ← [Passive movement @ Various joints] → Increased resistance — Diminished resistance

Extend @ Knee joint ↖

Sudden stretching of hypertonic mus. produces reflex contraction.

Spasticity (UMN lesion, pyramidal)

- Hypertonia more in antigravity muscle than gravity muscle.
- clasp knife
- Initially high resistance felt than low resistance.
- Velocity dependant

Rigidity (Extrapyramidal)

1) Leg Wheel (as c bernau)

2) Lead pipe

both (gr/Antigravity) ↑ tone.

- Effects flexors & extensors of all four limbs equally
- Planter flexor
- Deep Reflex (N) Clonus (-)

Planter - extensor

Deep reflexes → Brisk

Clonus (+)(-)

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DESCENDING TRACTS

SPASTICITY, CLONUS → PYRAMIDAL

RIGIDITY → EXTRAPYRAMIDAL

PYRAMIDAL

(Corticospinal tracts)

- Ant. → No decussation (uncrossed)
- Lat. → Decussation (Crossed)

↓ Terminate ↓

α/β motor Neurons in Spinal Cord

f(n) – Voluntary movement (fine & skilled mov.)

lesion → Effects

a) Voluntary mov (sp of extremities)

b) Muscle tone (Spasticity)

c) Reflexes
- All Superficial → lost
- Deep → Exaggerated

Babinski ⊕

Rubrospinal tract (Thoracic) → flexor mus. tone

Olivospinal tract → Reflex mov. from head in response to visual & auditory stimuli
proprioceptors

EXTRAPYRAMIDAL

- Medial longitudinal fasciculus → Reflex ocular mov & Integratn of ocular & neck movement
  Extend upto Cervical
- Anterior Vestibulospinal → upto thoracic ver.
  Lat. vestibulospinal → upto throughout spinal coord
  f(n) Adjustment of posi of head & body during angular & linear accelera
- Reticulospinal (Pontine / Medullary)

	Pontine	Medullary
Voluntary mov	⊕	⊖
Mus. tone	⊕	⊖
Respiratn	expiratn	Inspiratn
Blood Vessel	VC	VD

Defect → alt. in respiratn, BP, mot. of body & mus. tone

- Tectospinal → upto Cervical Segment → mov. of

3) Power → Force of Contraction generated Voluntarily by the muscle. (14)

See at all places
- Hip (flexion, extension, adduction, abduction)
- Knee (flexion, extension)
- ankle (Dorsiflexion, plantar flexion, Inversion, eversion)
- Toes (Dorsiflexion, plantar flexion)

0 – absent
1 → Flicker of Contraction
2 → Gravity eliminated → Lateral mov on bed
3 → against gravity
4 → against resistance
5 → Normal.

Reflexes

Superficial reflex → lost in UMN. (Do not Cross midline)

- Abd reflex (T7-12) → medially & downward stroke
- Cremasteric reflex (L1,L2) → Genitofemoral N (E) → femoral (A) → Sensory
- Plantar reflex (L5,S1,S2) → usually on taping lateral aspect of Sole.
  → motor

Babinski → Dorsiflexion + fanning

(N) → plantar flexion of all toes
- Dorsiflexion & inversion of foot
- Flexion of knee & hip.

In UMN → Babinski +ve (Extensor plantar)
- Dorsiflexion of great toe
- fanning of other toes
- Dorsiflexion of ankle
- Flexion of knee & hip.

(E) + (A) → Both Tibial

Deep tendon reflexes

[Can do Jendrassik Maneuver if not able to elicit Routinely
First c one hand, hook two hands, clench teeth.]

Grade
- 0 → absent
- 1 → present (@ ankle jerk)
- 2 → brisk (@ knee jerk)
- 3 → exaggerated
- 4 → clonus.

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COMPLETE TRANSECTION

(1) SPINAL SHOCK → Stage of flaccidity

- **Limb Paralysis**
  - CERVICAL → Quadriplegia
  - TLS → Paraplegia
- **flaccid Paralysis** — loss of tone
  - Urinary Retentn
  - Constipatn
- **loss of Reflexes**
  - Venous Return ↓ed (↓ mus. tone)
  - BP.
- **loss of Sensation** (-all)
  - HR → ↓ed
  - Pulse - weak/Thready

DONOT effect BP as symp. VC fibres lease spinal cord betn T_1 & L_2 segments ← Below L_2

All fibres (Sympathetic) are transected ⇒ large fall in BP & if @ Cervical region ⇒ Resp. paralysis ← T_1 & above / T_1 Segment ← Lesion level

(2) Stage of Reflex activity / Stage of Recovery - after 3-6 weeks

1st Smooth mus tone/activity → Sympathetic tone to Blood vessels → BP restored → 3 months → Skeleton mus. tone [But Still mus remain hypotonic] → Paraplegia in flexion

Extensor reflexes return (1st Knee Then Ankle) ← 1-5 weeks ← [1st Babinski / Babinsky] flexor Reflexes comes 1st

(3) Stage of Reflex failure :- If pt. recovery is halted / Infectn
Reflexes fcn return halted → failure → flaccidity & wasting

Bicaps - C_{5-6} Tricaps C_{6-7}

femoral — Knee jerk ($L_2L_3L_4$) → clonical, pendular
medial Popliteal — Ankle jerk (S_1, S_2) → clonical, Kneeling position, prone position

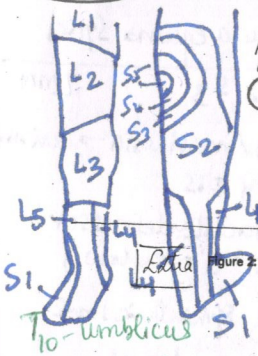
Clonus → Sudden sustained passive Stretching of muscle ⇒ Rhythmical Contraction of muscle (>6), Sign of Pyramidal

Reflex grading

Patellar clonus → Extended knee. (L_2 $\cancel{3}$ $\cancel{4}$) displaced downwards → rhythmic Quadriceps Contraction

Ankle clonus → Flexed knee supported @ popliteal fossa (S_1S_2) Sudden dorsiflexion of foot → rhythmic Calf muscle Contraction (hamstring)

Anal Reflex S_2 $\cancel{3}$ $\cancel{4}$ $\cancel{5}$ → Stroke perianal skin (E+A → Pudental)



T_{10} - Umbilicus
L_1 Inguinal
L_2 Thigh
L_3 Knee
L_4 - medial leg & foot
L_5 - Dorsum of leg & foot
S_1 - lat. foot + Post leg + Thigh
S_2 - Post med leg & thigh
S_{234} - Perianal

Figure 2: The neurological status of a patient with neuro-urological symptoms must be described as completely as possible: (a) dermatomes of spinal cord levels L2-S4; (b) urogenital and other reflexes in the lower spinal cord.

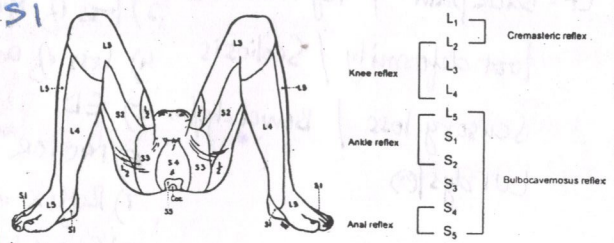


Table 5: Neurological items to be specified*

Sensations S2-S5 (both sides)
Presence (increased/normal/reduced/absent)
Type (light touch/pin prick)
Affected dermatomes
Reflexes (increased/normal/reduced/absent)
Bulbocavernous reflex
Perianal/anal reflex
Knee and ankle reflexes
Plantar responses (Babinski)
Anal sphincter tone
Presence (increased/normal/reduced/absent)
Voluntary contractions of anal sphincter and pelvic muscles (increased/normal/reduced/absent)
Prostate palpation
Descensus (prolapse) of pelvic organs

*Adapted from Stöhrer et al. [1] (LE: 4; GR: C).

Dr. Ankush Jairath

Neurogen

COMPLETE TRANSECTION

(1) Incomplete Transect^{n}

(1) Stage → Same

(2) Stage → 1st Tone returns to extensor mus. & not to flexor muscles
[Paraplegia In Extension]

Flexor reflexes ← Extensor reflexes
then 1st

Lim
CER
Quac
• t
F
D
V
b

Teethered Cord Synd	Cauda equina Synd
@ Caudal end, Spinal cord is anchored by lipoma / fibrous Cord / Scar from prev. Sx	S_1 S_2 S_3 LMN
Initiat^{n} - Child @ time of Growth Spurt Adult @ time of sports / MVA	1) Saddle @ Anaesthesia → Perianal Sensory loss
CF - Back pain / leg weakness	2) Acontractile detrussor (Retent^{n} c overflow)
Foot deformity / Scoliosis	3) loss of Sphinteric tone
Sensory loss / Bowel dysfn	4) loss of anal tone
LUT dysfn	5) ED
	6) MOTOR - Paraplegia
	7) Reflex - Absent ankle reflex
	8) Severe back pain Sciatica

(2)

(1s

(3)

Causes
Disk prolapse
Trauma
LC Stenosis
Tumors

* In case of Neurogenic bladder for say >5 yrs There is no evidence of UTI ⇒ Bladder is empty & adequately

* If there is (N) Height / weight gain & no features s/o CKD ⇒ bladder is emptying well

* Incontinance sp. @ night time ask How much amount
Small ← He/She leaks → large
May be due to sphinter weakness so In lying down posit^{n} urine leaks ↓ Gravity
Due to D.O. → Contract full Leakage

* In Small Capacity bladder → Incontinance
fixed amount & fixed time
→ Urgency
Variable amount & Variable time interv

* On Standing if Incontinance occours → overflow
→ weak Sphinter

* In early phase of Spinal Shock → DA → Overflow Cont Incont
[but Still bladder remains full] Intermittent Incontinence ← Taken up by reflex arc ← after 4-6

* Causes of Neurogenic bladder - Young, Short history
R/o SCI, trauma, TM, MS,

Date :

* If there is involvement of only 1 Kidney in c/o LUT Symptoms

⇓

- functional obstruction
- Reflux nephropathy
- U/L Recurrent PN → ∵ of diffent intramural ureteral length
- Diverticula VUJ
- Calculus formatn
- Compresg

* If after putting PUC in obstructive bladder S. Creatinine increases

Postobs. Diuresis ← → Bladder spasm itself

*

LMN	UMN
- Low pressure system	· High pressure system
- Smooth walled bladder	· Trabeculated, Diverticula
- Overflow Incontinance ∵ Sometimes poor stream So bladder always full	· Due to ↑ Detroussor contract → Complete emptyg sometime So bladder may be empty
- Large Capacity bladder	· Small Capacity
- Compliance - good → No B/L HUN	· Compliance poor → B/L HUN (as f/o obstructn → DSD)

* Acceptable Social Incontinance → upto 2 pads

* Crede's manoeuvre is not advisable when sphincteric spasm is there, It can be used as an alt to CIC as Suprapubic tapping can also be used → Initiate micturatn reflux

X-ray KUB → Stone*, Spine, bowel, Kidney

Investigations

Date

MCUG (1st) then UDM - Always do, See for Reflux, bladder neck, Paraure diverticula
Donot comment on bladder Capacity / PVR
See all plates (Scout & Lateral films also)

UDM → Donot do ~~by~~ UDM in presence of high grade reflux else it will be fallicious
Done to see propioceptn, bladder Capacity, most Imp Compliance, DO, DA
Never diagnostic

Cystoscopy →
To look for Capacity ↓ anaesthesia
Paraureteric diverticula can be missed in MCUG
BN, TRIGONE, ORIFICE] help in managg reflux

DMSA :- (Yes) Any neurogenic bladder c high grade reflux get f(n) of the kidney

* In neurogenic bladder, high pressure bladder becomes low pressure with time but in PUV high pressure remains high pressure (∵ of valve bladder Syndrome)

* Indication of (UDM) in small Child (<2 yrs) having meningio-myelocele if - SFK
  - B/L UT Changes - Bladder overactive
  - filling rate = 10% of bladder Capacity (ml/min)
  - for every 100 ml ΔP ~ 10 cm @ Slow fill rate (So if its > this ⇒ Poor Compliance)
  - Storage pressures are more devastating than voiding pressure

* For OAB
  - Tolterodine → Safe in Child, once daily dose, @ 1 mg/Kg/day but Capsule form (so difficult to adm.)
  - Oxybutinin → $T_{1/2}$ 8hrs so BD/TDS dosing 0.2 mg/Kg/~~day~~ dose 2-4 divided doses

Taxim 50-100 mg/kg/day IM/IV

others - DFV UD

Young pt c Voiding dysf(n) → PBNO - Bladder neck fails to open ⇒ F(x) obstructn in absence of anatomical iteo - Sympathetic NS dysf(n) Δsis. Vicleourodynamics
3 types on VUDM - Nitti et al ① High pressure low flow ② (N) pressure low flow c narrowg @ bladder neck ③ delayed opening of bladder neck > 10 sec. (T/+) ∝ # or TUI

* How to See for Nadir S.Cr Pt on PUC [factor deciding Nadir S.Cr

USG - See Parenchymal thickness → Good
echogenecity - CMD maintaind] So S/o S should be to (N)

General CKD features ⇒ Suggest Cr. may not come to (N)
Whether there is ureter dilatn / persistant HN ⇒ May have divert proxim

(Pt S.Cr from 7 → 1.5) Rgn SPC

* In non Compliant bladder c SPC, How will U F.U./D/C pt

Start CIC + High dose Cystran + ∝ # [Donot remove CIC on 1st go]
⇓ if S.Cr trendg ↑
Do overnight drainage
(it is ∵ Child is not doing CIC @ night time & nor he can't do it

⇓ Still rising
Give BOTOX
Detrussor Myotomy

If pt. not Compliant c CIC
⇓
Give option of Mitrofinoff

CASE HISTORY 8

Undescended Testes

Master ____ , ___yr Old male child , brought by ____ , Study^{g} In ___ from ____ city c/c/o

H/o Undescended testis ← 4-6 times In V/L testis, 1-1.5 times In C/L testis] Risk of CA

- When observed (at birth) , U/L or B/L , Noticed by whom
- constant / Intermittent ascend (retractile)
- whether tnt @ birth & later absent or vice versa
- Swelling In Inguinal region or other ectopic sites (M.C Sup. Inguinal pouch (ant. to rectus mus.) , Prepubic [Pubic tail.] Perineal tail , Scrotal tail , femoral tail) 5 tails of Gubernaculum (Lockwood theory)
- H/o opp. testis
- H/o Inguinoscrotal swelling c changes In position c Supine or coughing or crying
- H/o passing urine from EUM / below tip (hypospadias)
- Penis - Ⓝ development
- Ectopic Site swelling (trauma, pain, torsion, orchitis)

H/o Iteology

FTND / Preterm / Breech
LB Wt.

Early maternal age ← Maternal History – Hormonal (ART) / alcohol (drug abuse) / Smoking / Diabetes
Father / Sibling

H/o endocrine disruption (Pesticide Intake / DES)

Date :

H/o Complications

Torsion

Trauma

Epididymo-orchitis

H/o tumor (adult) → Abd. Pain, ↑ Size,
H/o Infertility H/o LN → Abd pain / fullness / Pedal edema
Mets → Chest / bone

If Child >15 yrs (adolescent)
H/o 2° Sexual Characters
Voice, pubic/fascial/axillary hairs
Growth spurt / penile development

Adult
H/o Tumor
Sexual H - Intercourse, erectn, libido
Infertility history

- Developmental History / Personal history
- Past History :- H/o any Sx (Inguinal)
(hernia Sx might cause undescended testis → 2° Cryptorchism or testicular retract")
- Family history :- Brother 8-12 times, Father 2-4 times
Personal H → 12 times risk

Adult
Married, Children,
Sexual history

Child
H/o IIIrd Sibling or family

Examination / General → 2° Sexual Characters [only if B/L UDT or ass. c Klinefelter Syndrome / Dows Synd.

① frog leg position
- Start milking from ASIS to scrotum c one hand & palpate with other hand

Inhibition of Cremasteric reflex

② Seated
- Examinatn 1st in Supine (if not palpable) → Cross legged posit (sp. in Child)
Retractile testis pushed to scrotum ← ORE Chair test

③. Leg raising test → for ectopic testis vs. undescended testis (Inguinal region)

④ - frog leg position → foot soles touching together for retractile testis
④. Squatting position → Cremastric Relaxation
Testis drops in scrotum

Try to bring Testis towards Scrotum
↓ 1 min
Retract Immed
↑ 1 min will lead to fatigue of Cremaste

UDC

L/E - SCROTUM

INSPECTION - Development, Rugosity opp. scrotal sac
Assymetry of Scrotal Sac

Palpation - Swelling - Size, Shape, position, mobility, consistancy, lowest attainable level
opposite testis - Examine fully
Hernia / hydrocele
Can get over the swelling / not
Testicular Sensatn

- Penis - Streched Penile length [neonate 1.9cm / >2SD for age; Av. Penile length 13cm adult]
  Circumcision — Hypospadias
  Phimosis, EUM — Ambigous genitalia
  Pubic hair +/-

- Inguinal Region Insp. Any Swelling / Scar mark
  Palpat°. Swelling - level Size Shape
  atrophic ← (Compare c/L testis)
  mobile / fixed
  Reduciable / ↓ In Size
  Change In Size on coughing, tenderness/consistancy
  CA testis, TB testis, Mumps — DD — Testicular Sensation (lost in tumors)

- P/A - R/o Prune belly
  Gynaecomastia (2%, most NSGCT, ↑HCG, ↑E, ↓Androgen) — Leydig Cell tumor

DD - Torsion Epididymitis Epiorchitis Hematoma
Spermatocele Hydrocele Hernia Appendicular tumors

* % of Ab(N) testicular location - 34% Abdominal
  12% - Peeping 27% Canalicular 27% - High S (beyond Ext ri
  (Docimo et al 1992)
* 11% Ectopic
* 12-24% Ass. hypospadias
* HYPOSPADIAS (+) U/L or B/L CRYPTORCHIDISM + 30% D
  30% DSD — 50% PROXIMAL
  15% DISTIL
* Is Inguinal USG Recommended - Yes
  - If testis not palpable & pt is obese/non-coperative
  - Sensitive In identifyg testis In nonpalpable testis- 95-9
  - Sometime abdominal testis is also picked
* Role of USG KUB - Screening for ass. Renal ab(N)
* Role of MRI - When ectopic testis not localised
  Laparoscopy
* % of ab(N) testicular Bx In C/L testis - 22-95%
* Timing of Repair - At 6 months (In FT baby) & 6M beyond (In pretes
  as after 6 months it is unlikely to descend
  Early Sx restore testicular growth
  Early hormonal surge may facilitate Surgery
  Hormone therapy is not considered efficacious

Date :

* Role of Medical M/m - No Role (LHRH / hCG)
  - Effective In retractile testis only
  - Effect 58-100% In retractile testis
  - Damage to testis, ↓ S/G, ↑ Germ Cell apoptosis

Nordiac consensus group statement - Testicular Bx & hormonal therapy not to be used In boys ć cryptorchm

* Fertility - Successfull Paternity < U/L 81%. B/L 35%.

* Risk of Malignancy ⇒ 2.5-8 times overall
  6.3 R.R. I/L
  1.7 R.R. B/L
  • ↓ to 2-3 times In ♂ underg⁹ prepubertal orchidopexy

* 1ST HISTO CHANGE In UDT - ↓ Leydig Cells

* fertility Chances donot change much In U/L UDT but Significantly ↑es In B/L UDT after orchidopexy

* 20% of nonpalpable testis become palpable ↓ anaesthesia

* Congenital - Extrascrotal @ birth (non scrotal)
  Recurrent - Testis descent spontaneously postnatally but return
  Acquired / Testicular ascent - UDT documented as Scrotal at previous examinatn ć out Inguinal Sx (previa)
  Secondary / Testicular Retractn - Testis ⊆ ant. supra scrotal 2° to Inguinal Sx or orchidopexy due to Scarring
  Retractile - Retract easily out of scrotum but can be manually replaced In Stable Scrotal position

(persistence of fibrous remnant of processes vaginalis that either closes or shortens the cord overtime with an open sac)

Date :

* Incidence - 1-4% In Full term
  1-45% In Preterm

* Non Syndromic : Syndromic Ass :: 6 : 1

Risk factors - Prematurity, LBW, breech, maternal Diabetes & DES, Gene - INSL3, HOXA10, HOXA11 (early gestatn age of Mother (<22yrs))

Klinefelter Syndrome
Down "
Prune-belly
Spigelian / umbilical hernia
Cerebral palsy / Imperforate anus
PUV

* likelyhood of descend @ 1year → Extrascrotal 50%
  → High Scrotal 87.5%

* UDT < Palpable / Non-palpable } → Kaplan Classificatn

* UDT - Palpable 80%.
  U/L 70% (R > L)
  Hernia 100%

* Karyotype Indicatn → B/L UDT +/- Penile dev. ab(N)
  → Proximal hypospadias

* M.C. Renal anomaly - Renal agenesis

* Vanishing testis - Predicting factors → Enlarged c/L tes
  → absence of palpable Intrascrotal appendages → Non demon
  of testis on lap (blind endg vas / spermatic vessels)
  If B/L → ↑ Gonadotrophins

* CT vs MRI sensitivity to pick UDT is same

CASE HISTORY 9

RCC / TCC / PUJO

Date

PUJO – modes of mtat

- Antenatal
- Neonatal → Palpable Mass
- Infant
  - N/V
  - Failure to Thrive
  - ↑S.Cr
  - ↓U/o
  - Asymptomatic
- Adult
  - Incidental
  - flank pain → Intermittent +/- N/V } Cyclical
  - Azotemia
  - Hematuria (25%)
  - Pyuria fever
  - HTN

1. Lump In abdomen
   - how did noticed - Incidental / Symptomatic
   - Since when
   - Enlarging or Same
   - If enlarging, rate of growth
   - Painful / painless
   - Associated Symptoms – hematuria
     fever
     flank pain
     Nausea / vomiting

DD >50 yrs

1. RCC 2. HN
3. Cystic disease

} Painless

Young

1. HN
2. Cystic dis
3. Malignancy

} Painless

Pain – Mild → RCC, HN, Cystic dis

Pain – severe → Stone c̄ HN, Pyo / Perinephric abcess, XGP, Cystic dis, RCC

1. HN
2. Pyonephrosis / Perinephric abcess
3. XGPN
4. Cystic dis.
5. Malignancy

} Ass c̄ Pain

If PUJO – Antenatal History → Growth Retardat° / oligohydram / Preterm
H/o Dietal Crisis (H/o ↓ in Intensity of pain & Swelling after passing large amount of urine)
H/o 2° PUJO → (adults) ⓑ Stone, Sx, TB, Ureteric Malignancy

↓ next page

KID – VUR, POMU

3. Hematuria - Initial / complete / terminal, gross, Clots, Painless / Pain⊕ / Cont. or Intermittent
[Cause Renal Congestⁿ / AV malformatⁿ / ↑neo vascularity

2. flank pain - Type, Severity, onset, duration, radiatⁿ, (Intermittent / cont), Relief c̄ medication, able to do Ⓝ activity, relation to mictuatⁿ

OLD AGE ←	DD	→ YOUNG AGE
- Renal Calculus dis		- Renal Calculus dis
- HN		- HN
- Malignancy		- AMI (Young female)

H/o Iteology

1. Malignancy → Constitutional Symptoms
Obesity, HTN, Smoking, occoupation
Analgesic Abuse, Bone pain

2. HN → Stone disease - lithuria
flank pain
H/o Uro Intervention

3. ADPKD → HTN., Pain, family history, renal failure

4. AMP → family history, female

5. PUD → At Birth ⇒ Respiratory distress, Cried Immediately, feeding well / not, Birth weight
Postnatal → UTI / LUTS / Pain / fever / weight gain / Height / Immunisatⁿ milestone / bowel habits

H/o Complication (Jaundice (Stauffer) → IL-6 → 70% Normalise after Nephrec; IL-1 / TNF-α)
- Paraneoplastic - fever, night sweats, Generalised body pain, malaise
- UTI - fever, flank pain, Pyuria, burning mictu
- ARF / CRF
- Constitutional Symptoms - loss of wt / apetite, night sweat
- Metastasis - Cough, hemoptysis, bone pain, jaundi
- IVC Inv - Scrotal swelling, Pedal edema
- H/o Intervention - ureteric stricture

Past history - comorbid, Sx, Interventⁿ

Drug history - Anticoagulants / analgesics / drugs (Cyclopho) causing high coloured urine, Prior Radi

Personal History - Diet, Smoking, alcohal, addict (occoupatio)

fanily - F/H/o RCC
female - Mensural history / obstetric (AML)

Examinatⁿ → Performance Status, P⁻ I⁻ C⁻ P⁻ F
BP ↑ / ADPKD / RCC / CKD · Cervical L.N

Abdomen

Inspection :- Shape & Contour of abdomen - Ⓝ Sc dis
umblicus - Central / deviated
overlys skin (Inflam Sinus,
quadrants moving c̄ resp, flank fullness +/-
Sign of Inflammatⁿ in flank, dialated veins, sc
sinus

Date :

Renal L fullness In sitting position (seen from behind)
Hernial orifice , Supra clavicular Swelling

Palpation :- Temp , Tenderness , Renal angle .
lump - Size Shape margin extent - crossing midlin
tenderness , mobility , mov c respirat"
Consistancy , Insunat" of finger between lump & coastal margin
Ballotment / Bimanually palpable
Intraabd / parietal ⇒ Leg rising test
Intraabd / reteroperitoneal ⇒ Knee elbow posit"
Liver spleen Bladder palpable / not

Percussion :- General not all over abdomen
Upper border of liver & spleen dullness
Over lump & renal angle
Band of colonic resonance
Ascites

Auscultat" - ✓

E.G → Varicocele (non-reducible)
Supra Clavicular
Bone & Spine CNS - ↑ Ca^{2+} [PTHrP, Tumor derived Vit-D, PG's, Osteolytic mets → ↑ DTR / ECG Chang
T/t · Hydrat" / Diuresis / Biphosphonates / Steroid
Calcitonin

Date

CT In RCC - desciption :-

1. Opposite Kidney

HOMO

Pathologic Subtypes of RCC

HISTOLOGY*	FAMILIAL FORM AND GENETIC FACTORS	GROSS CHARACTERISTICS	MICROSCOPIC PATHOLOGIC CHARACTERISTICS	OTHER CHARACTERISTICS
1. Clear cell RCC (70%-80%) Golden yellow Exophytic	von Hippel-Lindau disease VHL gene (3p25-26) mutation or hypermethylation Chromosome 3p deletions Also, loss of chromosome 8p, 9p, 14q; gain of chromosome 5q	Well-circumscribed, lobulated, golden yellow tumor Necrosis and hemorrhage common Venous involvement also common Cystic degeneration	Hypervascular tumor Nests or sheets of clear cells with delicate vascular network IHC†: low MWCKs,‡ vimentin, EMA, CA-IX	Originate from proximal tubule Aggressive behavior more common Tumor shrinkage common with targeted molecular therapy May respond to immunotherapy
2. Multilocular cystic clear cell RCC (uncommon)	Identical to clear cell RCC	Well-circumscribed mass of small and large cysts	Cysts lined by single layer of grade 1 clear cells No expansive nodules of tumor cells	Almost uniformly benign clinical behavior
3. Papillary RCC (10%-15%) (Variously Chromophilic) More common in pat. having: ESRD & acquired renal cystic dis.	Type 1: HPRCC Type 2: HLRCC Activation of c-*MET* oncogene (7q31-34) by mutation common in HPRCC but uncommon (~10%) in sporadic cases Trisomy of chromosome 7 and 17 loss of Y	Fleshy tumor with fibrous pseudocapsule Necrosis and hemorrhage are common	Hypovascular tumor Papillary structures with single layer of cells around fibrovascular cores Type 1: basophilic cells with low-grade nuclei Type 2: eosinophilic cells with high-grade nuclei IHC: LMWCKs, CK7 (type 1 > type 2), AMACR	Originate from proximal tubule Commonly multicentric Common in ARCD Type 1: good prognosis Type 2: worse prognosis
4. Chromophobe RCC (3%-5%)	Birt-Hogg-Dubé syndrome Fumarate hydratase gene (1q42-43) mutation Loss of multiple chromosomes (1, 2, 6, 10, 13, 17, 21)	Well-circumscribed, homogeneous Tan or light brown cut surface	"Plant cells" with pale cytoplasm, perinuclear clearing or "halo," nuclear "raisins," and prominent cell borders Positive Hale colloidal iron staining, MICROVESICLE IHC: diffuse CK7	Originate from intercalated cells of collecting duct Generally good prognosis, although sarcomatoid variant associated with poor prognosis
5. Collecting duct carcinoma (<1%)	Unknown Multiple chromosomal losses	Firm, centrally located tumor with infiltrative borders Light gray to tan-white	Complex, highly infiltrative cords within inflamed (desmoplastic) stroma High-grade nuclei, mitoses	Originate from collecting duct Poor prognosis May respond to chemotherapy
6. Renal medullary carcinoma (rare)	Associated with sickle cell trait	Infiltrative, gray-white Extensive hemorrhage and necrosis	Poorly differentiated cells with lacelike appearance Inflammatory infiltrate	Originate from collecting duct Dismal prognosis
7. Unclassified RCC (1%-3%)	Unknown	Varied	Varied	Origin not defined Generally poor prognosis
8. RCC associated with Xp11.2 translocations/*TFE3* gene fusions (rare)	Various mutations involving chromosome Xp11.2 resulting in *TFE3* gene fusion	Well-circumscribed, tan-yellow tumor	Variable; often clear cells with papillary architecture IHC: nuclear *TFE3*	Occur in children and young adults; 40% of pediatric RCC t(X;17) present with advanced stage and follow indolent course t(X;1) can recur with late lymph node metastases
9. Post-neuroblastoma RCC (rare)	Unknown	Well circumscribed	Oncocytic or clear cells with solid and papillary architecture	Occurs exclusively in children with prior neuroblastoma
10. Mucinous tubular and spindle cell carcinoma (rare)	Unknown	Well-circumscribed, tan-white-pink tumors centered in medulla	Mixture of tubules and spindle-shaped epithelial cells; mucin background	Favorable prognosis

*Sarcomatoid variants of all of these subtypes have been described and are associated with compromised prognosis.
†Immunohistochemistry using these markers can help to differentiate between RCC subtypes.
‡Cytokeratin (CK): low (or high)-molecular-weight cytokeratins (MWCKs).
ARCD, acquired renal cystic disease; HLRCC, hereditary leiomyomatosis and RCC syndrome; HPRCC, hereditary papillary RCC syndrome; IHC, immunohistochemistry; RCC, renal cell carcinoma.
From Eble JN, Sauter G, Epstein JI, et al. Pathology and genetics of tumours of the urinary system and male genital organs. Lyon (France): IARC Press; 2004; data from Störkel, 1997; Renshaw, 2002; Zambrano et al, 1999; Pantuck et al, 2001; Linehan et al, 2003; Pavlovich and Schmidt, 2004; Klatte et al, 2008; and Zhou, 2009.

Centrally located → early metastasis
Poor outcome

Extent of mass & Color
If Inv.⊕ prepare properly before Sx

CT In RCC - Why? Stag[g], Me
No. of RA/RV , other S functio
If same Kidney f(n) or not
Adhesion more likely ← Chances of Inv
Technically difficult. RV/IVC may

Dr. Ankush Jairath
Resident In Urology

Date

enal L fullness In sitting position (seen from behind)
iernial orifice , Supra clavicular Swelling

Supra Clavicular
ack & Spine CNS - ↑ Ca^{2+} [PTHrP, Tumor derived Vit-D, PG's; Osteolytic mets → ↑ DTR / ECG Chgs
T/t - Hydratn / Diuresis / Biphosphonates / Steroid
Calcitonin

CT In RCC - desciption :-

1. Opposite Kidney
2. Pathological Side → Mass (size, Shape, location, enhancement HOMO HETRO
   Calcification, perinephric fat Stranding, ass. HN, PCS Invasion, remaining parenchyma, adrenal, Surroundg organ Infiltratn
3. Vein - Renal / IVC thrombus, extent, enhancement, Collaterals
4. Lymph Nodes : Size, number, location, enhancement, relatn to vessels
5. Metastasis : Liver / Lung / Bone / Ascites

If on CT RA/RV Cuts not Given then how to Suspect RV Inv.

LL edema, varicocele, proteinuria, Hematuria, abd - dialated vein, Non-f(n) Kidney, Surgery - Multiple Collaterals, Enlargd edematous G

Cause of Pain In Renal Mass: Sudden hematoma, Neural Infiltratn ureteral obs (enlarged L.nodes), Psoas Infiltratn, Necrosed tissue # meter, urinary Extravasation

ORAL CONTRAST IN RCC VS ORAL Contrast In Pelvic Maligrancy

To See colon Inv. (Malena+ obstructn) ⇓ Relatn of mass & colon If Inv.⊕ prepare properly before Sx

To see L. node Involvement

CT In RCC - Why? Stagg, mets, No. of RA/RV, other G function
If same Kidney f(n) or not f(n)
Adhesion more likely ← Technically difficult
Chances of Inv. of RV/IVC may be ⊕

Date :

TCC - Discussion --------

* Lower pole mass is more likely to involve mesentry rather than colon/doudenum ⇒ So check mesentry ⇒ if Inv.⊕ ⇒ Resect mesentry & bowel (if not viable)

* Indicatn for Angioembolisatn in RCC - Bulky tumors Indentg Surroundg Structures 2. Intractable hematuria 3. Sick pt.

* X-ray KUB in Hematuria: R/o Stone, Mass Calcification, Complex Cyst, Renal Outline, bony mets

*

ADRENAL, KIDNEY, URETER

Multiple B/L

RISK FACTORS 1. Balkan (degenerative Interstitial Nephropathy) - 100-200 x
Aristocholic acid 2. Smoking (3x) 3. Coffee (2x)
4. Analgesics (thickng of BM - pathognomic)
5. Arsenic 6. Occoupatn → Petroleum/Plastic/Coal/Coke/Tar/Aniline dye
TCC → 7. Cyclophosphamide (Acrolein) → can be prevented by instilling MMC at time of NU ⇒ ↓RISK by 11%.

Locatn
- 5% • UT TCC - risk of bladder CA @ 5 yrs 15-75%.
- 25% Risk factor - Stage, grade, Multiplicity, refluxing ureter,
- 70% tnce of CIS in bladder, CA near Ureteric orifice (the margin)

CRF, Female gender, Immunosuppression, tumor Necrosis

* Earlier progression to Mus. Invasion & mets as thin mus layer Renal Parenchyma Invasion is most significant predictor of dev. of mets f/b vascular Inv.

* Unlike Bladder, Inverted Papilloma in UT are a/w high risk of Synchronous/Metachronous UT tumors so all cases FU to be done for atleast 2 years after initial diagnosis of Inverted papilloma

* M.C. non TCC UT tumor → SCC (analgesic abuse)

* Stage is most Imp predictor of Survival, Grade, Ass CIS, LVI

* Cystoscopy is mandatory, 85% Sessile 85% Papillary but Inva of Lamina propia/mus occours in 50% of papillary & 80% of Sessile (viz Bladd

* Ureteroscopy Indication? Where Δsis in questn after Radiology Stu

(ii) In pt Δsis will change M/m plan e.g. endoscopic resectn

Why ureteroscopy not done in all cases? Risk of tumor seedling, extravasation → dissemination So URS excluded when not necessary

* CYTOLOGY → Bladder urine I → 20% II → 45% III → 75%
Brush Bx Sensitivity & Sp 90% SE Hge/extravasation
FISH (Chr 3,7,17,9 Same Urovision), 85% of Renal tumors - Papillary

* Incidence of CIS (in lower ureter) at time of Cystectomy for bladder tumor 7-25%.
Incidence of Bladder tumor after T/t of UT tumor is 20-75% @ 5 yrs

Renal Insufficiency is ass. c higher risk of C/L UT tumor

Pelvis < Low Grade 5% / High Grade 91%
Ureter < Low Grade 26% / High Grade 64%

* Indication of NSS - Pyelotomy & tumor ablatn or Partial Nephrectomy
1. Solitary 2. Synchronous B/L 3. Predisposiln to form multiple recurre eg Balkan/Asenic/Analgesic abuse 4. Lowgrade Lowvolume 5. Poor Sx Risk Candida

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Resident In Urology

Date :

But Risk of tumor seedling ⇒ 7-60%

* Open Nephroureterectomy → For large / high grade / Invasive tumors

approaches → Thoraco abd (tip of 11/12th rib, extrapleural, extraperitoneal)
2. Midline transperitoneal 3. Upper ant. Subcostal + Gibson Incision

Role of adrenalectomy : No need if Gland appears (N) on preop Imaging grossly (N) at time of Surgery & if disease localised to renal pelvis.

M/m of distal ureter & Bladder Cuff : ① GIBSON / Pfannenstiel Incison → open
↔ TRANSVESICLE – more reliable
↔ EXTRAVESICLE
② TUR of ureteric orifice for (PLUCK TECHNIQUE) < Proximal Low grade
③ Intussusceptn (Stripping) technique ⇒ Failure rate ↑ 18.7%
④ Trans-Vesical ligation & detachment technique ⑤ Total Laparoscopy < Cystoscopy guided Stapler

Risk of tumor reoccouance in remaining stump → 30-75% (Bloom)

Ureteroureteostomy Grade 1 & 2 – Proximal or midureter, that are too large for endoscopic removal
Grade 3 or Invasive → when Nephron sparing is Goal
Incision → 12th Rib identificat° of Inv. Seg → Preop Imagg & URS + Intraop Palpath
1-2cm proximal & distal to the tumor, defect upto 4cm can be ✓

Distal ureterectomy c̄ direct Neo cystostomy → low G low stage tumo in distal ureter that can't be removed entirely by endoscopic means
Gibson / Pfannelstein Incision → ↻ → Anastomosis < Reflux → Add In URS
Non-Reflux – Prevent tumor seeding in UT

Subtotatal Uretectomy c̄ Ileal / Appendix ? replacement mostly distil to original site but proximal also ✓

* Risk of I/L recurrence after these Conservative Sx → 33-55%

→ Retrograde URS → For low volume ureteral & renal tumors
Adv:- lower morbidity & Maintainance of Closed System & non uro thelial system not exposed to tumo

Endoscopic Techniques → COMBINED → when Multifocal Involvement
↳ Antegrade → Potential tumor seeding outside UT → when large volume of tumors / small volume but in lower calyx

Tumor In → Prior Urinary diversion → Antegrade passage of guide wire → URS
→ Intramural ureter → URS ✓ → Basket → Laser fulguratn
→ Resectn – Snare / cold cup

Laser → fulguate → Bugbee
Resectoscope (only Intraluminal position) → Ho yag laser / Nd-Yag

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Indication for conservative management and level of evidence

INDICATIONS	Grade
Unifocal tumor	B
Tumor size <1cm	B
Low grade tumor (cytology / biopsy)	B
No e/o infiltrative lesion on CT	B
Understanding of close follow up	B

TECHNIQUES USED	
Laser should be used in case of endoscopy	C
Flexible URS preferred over rigid URS	C
Percutaneous approach remains an option in small, low grade UTT TCC unsuitable for ureteroscopic treatment	C

Indications for Radical nephroureterectomy	
Indications for RNU for UTUC	**Grade**
Suspicious of infiltrating UTUC on imaging	B
High-grade tumor (urinary cytology)	B
Multifocality (with 2 functional kidneys)	B
Non-invasive but large (>2cm)	B

Techniques for RNU for UTUC	
Open and laparoscopic access are equivalent in terms of efficacy	B
Bladder cuff removal is imperative	A
Several techniques for bladder cuff excision are acceptable except stripping	C
Lymphadenectomy is recommended in case of invasive UTUC	C
Postoperative instillation (chemotherapy) is recommended after to avoid bladder recurrence	B

II. SOLITARY FUNCTIONING KIDNEY

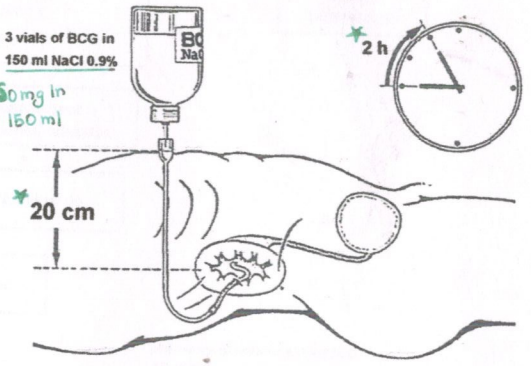
Conservative surgery in UUT TCC (European guideline on UUT TCC: 2013 update)

- Low grade UUT TCC
- Renal insufficiency
- Solitary functioning kidney
- Choice technique – location and experience
  - Endoscopic ablation
  - Segmental ureterectomy
  - Percutaneous access
  - Adjuvant topical agents

Segmental ureterectomy

- Adequate pathological specimen
- Definitive grade and stage analysis
- Preserve ipsilateral kidney
- Uretero-ureterostomy Vs Complete distal ureterectomy + ureteroneocystostomy
- Area around the tumor should not be invaded
- Failure rate after segmental resection of upper and mid ureter is higher than distal upper

Antegrade infusion of BCG



BCG protocol

- Normal urine culture, under ultrasound guidance
- Prone position, 10 Fr nephrostomy tube
- Flask with 360mg BCG in 150 ml NS at 20cm above kidney level of the supine patient
- Rate of infusion 1ml/min
- Six wkly perfusions, PCN removed after 6th dose
- 6 weekly course of BCG repeated once or twice

(Giannarini G, Studer et al. Eur Urol 2011; 60: 955-60)

Multivariate model predicting T2+ / non organ confined disease

- **Strong, independent predictors of advanced pathological stage**
  - Local invasion on preoperative imaging and
  - High-grade disease on ureteroscopy
- **Probability**
  - 82% for pT2+ and 76% for NOC-UTUC.
- **Predictive accuracy of the model**
  - 70% for NOC-UTUC and 71% for pT2

(Ricardo L. Favaretto et al, BJUI Int; 109: 77-82)

Factors determining optimal treatment

- Individual patient's clinical characteristi
  - Renal function
  - Medical co morbidity
  - Tumor location,
  - Tumor grade and
  - Tumor stage

But Risk of tumor seedling ⇒ 7–60%

III. BLADDER RECURRENCE AFTER UPPER TRACT UROTHELIAL CARCINOMA (UTUC)

Bladder recurrence after upper tract TCC[1,2]

- Recurrence rate after treatment of a primary UTUC - 22 to 47%
- Suggest routine bladder surveillance with cystoscopy and urine cytology for at least 5 years

Upper tract recurrence after bladder TCC[3]

- Overall prevalence after cystectomy - 0.75% to 6.4%

Guidelines for follow-up of patients with upper tract urothelial carcinoma after initial treatment[4]

After RNU, over at least 5 yr	Grade
Non invasive tumors	
Cystoscopy/urine cytology at 3months then yearly	C
CT every year	C
Invasive tumor	
Cystoscopy/urinary cytology at 3 mo and then yearly	C
CT urography every 6 mo over 2 yr and then yearly	C

Risk factors for bladder recurrence[3,5]

- Multiplicity of tumor (hazard ratio = 2.060, P = 0.006)
- Positive surgical margins ($P = 0.045$)
- Tumor necrosis ($P < 0.001$)
- Stage & grade
- Immunosuppression (hazard ratio = 1.915, P = 0.037)
- Location of ureteric primary – lower ureteric tumor has highest risk of bladder recurrence
- Method of management of lower ureter[1]

Management of distal ureter[4]

- Various techniques described:
- Open bladder cuff (trans vesical approach)
- Trans urethral resection of ureteral orifice (Abercrombie technique)
- Intussusception (Stripping) technique
- Higher risk of recurrence and not recommended[4]
- Transvesical ligation and detachment
- Total laparoscopic technique

Impact of distal ureter management on oncologic outcomes[6]

Lack of consensus regarding optimal approach to the bladder cuff during radical nephro-ureterectomy for UTUC

- A large retrospective study of 2681 patients treated with RNU for UTUC from 1987 to 2007 has assessed the outcome of intravesical recurrence, recurrence-free survival (RFS), cancer-specific survival (CSS), and overall survival (OS).
- ***The endoscopic approach was associated with higher intravesical recurrence rates but no difference in survival outcomes***

Risk factors for upper tract recurrence after bladder cancer[7]

- Stage & grade of tumor
- Multiple tumors
- Presence of VUR
- Recurrent CIS after BCG treatment
- Tumor near ureteric orifice

Guidelines for surveillance of upper tract after TURBT[8]

	Grade
Regular (yearly) upper tract imaging (CT-IVU or IVU) for high-risk tumors	C

Intravesical adjuvant therapy after nephro-ureterectomy

- *Intravesical Mitomycin[9]:* A single postoperative intravesical dose of MMC (40 mg in 40 ml saline)
  - Absolute risk reduction 11%
  - Relative risk reduction 40%
  - NNT to prevent one bladder tumor is 9
- *Intravesical Pirarubicin[10]:* A single intravesical instillation (30 mg in 30 mL of saline) into the bladder within 48 hours.
  - Recurrence compared with control group
  - 16.9% vs 32.8% at 1 year
  - 16.9% vs 42.2% at 2 years

References and suggested Reading:

1 Xylinas E, Rink M, Margulis V et al, Multifocal carcinoma in situ of the upper tract is associated with high risk of bladder cancer recurrence. *EurUrol* 2012;61:1069-70.

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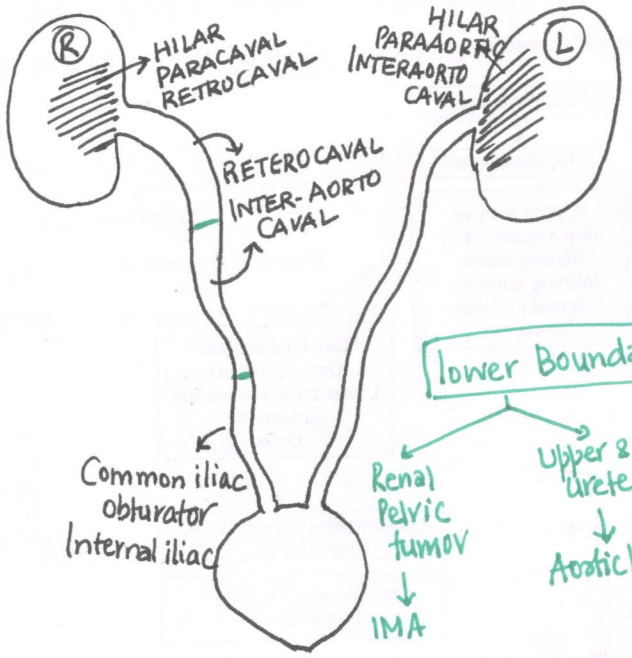
Intramural ureter → URS ✓ Basket → Laser fulguration
→ Resect^n — Snare / Cold cup
Bugbee laser fulguate Resectoscope (only intraluminal position) Ho yag laser Nd-Yag

Seedling ⇒ 7–60%

LAP In UTUC



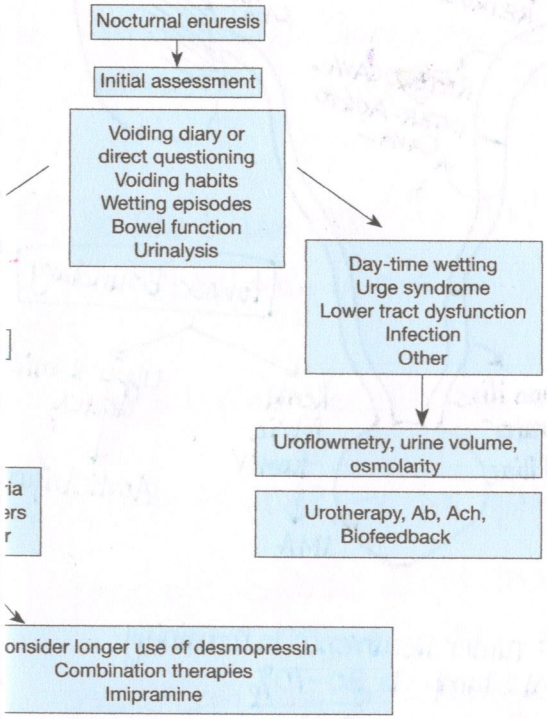
* RISK OF Tumor Recurrence In remaining ureteral Stump is 30–70%
* UTTCC → LTTCC 30%.
  LTTCC → UTTCC <5%

EVIDENCE OF SUPPORT → Level 3

- No Std template
- ↑ Pathological Stage & grade (Better) so Improves Staging
- No Role In Low risk (Ta / Tis / T1)
  LAP only In 0–5%
- No Survival benefit to date
- OPEN VS LAP → Sx based
- possible Subset of pt. that may benefit PT_2–PT_4 No but these Can only be identified Pathological
- Not a/w Significantly ↑ed complication
  except " " operative time

Basket → Laser fulgura
→ UPJ → Resect" — Snare / cold cup

f nocturnal enuresis



reatment of monosymptomatic enuresis

	LE	GR
e existence of a circadian clock has been proven	1	A

Intramural meter → URS → Basket → Laser fulguration
→ Resect — Snare / cold cup
Resectoscope → Ho yag laser
→ Nd-Yag
Laser → fulguate

Sp. & sensit. ~ 90%.

as Small Cup ↑ 6F ureteroscope - 2.7F forceps
8F ureteroscope - 3F forceps

RCC - For Biopsy : Always brush biopsy, ↑

Yeild is low, only cytology not exactly biopsy.

F.U.

After RNU → 5 yrs atleast

	Non Invasive	Invasive
Cystoscopy	3 mo → 1yearly	3 mo → 1yearly
Urine Cytology	3 mo → 1yearly	3 mo → 1 yearly
CT	1 year	6 mo x 2 yrs ⇒ 1yearly

After Conservative M/m → 5 yrs atleast

Cytology	3 mo → 6 mo (x2yrs) →	12 monthly
Cystoscopy	3 mo → 6 mo (x2yrs) →	12 monthly
CT	3 mo → 6 mo (x2yrs) →	12 monthly

CASE DISCUSSION 10

ADRENAL LUTS

PCC / Adrenal Mass

Dat

Hypertention

- age of onset , progression
- controll ~ medication (no. of drugs)
- Paroxysimal HTN / Sustained HTN
- orthostatic hypotention
- End organ damage - ↓ vision , CKD, Chest pain, TIA
- ED / loss of libido

Young DD
- ↑ Thyroid
- Conn's
- RAS
- CKD

Flank Pain / Mass

P.C.C - Headache , Palpitation , Tachycardia , anxiousness, episodic perspiration , panic attacks , flushing , Giddiness, exertional dyspnea , diarrhoea ,

Cushing - Proximal mus. weakness, easy bruisability , ↑ weight , abdominal Striae , H/o # , Stone disease
↓ libido / ED / Emotional liability / Headache / backache / Acne / Alopecia

Conn's - Mus. weakness (hypokalemia), Nausea, Vomiting , lethargy , Polydipsia, Polyuria, Nocturia

Addisons - Fatigue , lack of energy , ↓ Strength , anorexia, weigh loss , myalgia , hyper pigmentation ,
Salt craving
Dry itchy skin , loss of libido

GLUCO def.
MINERALOCORTICOID
ANDROGEN

VIRILISATN In female - male pattern baldness, hirsutism, oligomenorrhoea
feminisatn In male - Testicular atrophy, Gynaecomastia

Malignancy History : F(x) tumor (as before)

feminising : Gynaecomastia, ↓ Sexual desire

Virilising : Male baldness, Hirsuitism, oligomenorrhea

Local Effect : Abd. fullness, backache, N, V, lower limb edema

Mets : jaundice, Chest pain, breathlessness, cough, hemoptysis, bony pain

Mets from 1° : Melanoma : SKIN lesion RCC - hematuria, Pain...
Breast : Mass Neck Thyroid swelling

Syndromic Ass. - Just see MEN, VHL

Past history : H/o DM HTN - Metabolic Syndrome
TB - for addisons, COPD
Sx History [PCC - Any problem during Surgery]
HT Crisis & management

Personal H : Smoke / alcohol / addict^n / Diet / bladder bowel

Family H : Married, Children, any complaint in family

Sexual H : Sexually active, loss of libido, ED

Mensural H : Cycle - regular, menorrhagia
oligo / amenorrhoea - virilize

Drug H : Catecolamine / SSRI / TCA / MAO-I } ↑ Catecolamine release
Anti HTN
Ketoconazole, Aberiterone

EXAMINATION

GENERAL : BMI, Central obesity, moon face, buffalo hump, Striae, Pigmentation (↑ Addison, 2° mets melanoma) bruises, mus. atrophy, Thin skin, loss of axillary or pubic hair / excess hair, Sign of adrenarche / Pubarche in Children, Gynaecomastia, Flushing
P, BP] - v. imp. Pulse - all four limbs
BP - Supine / Sitting / @ episode / @ night

Systemic Ex → LOOK for Parathyroid / thyroid enlargement Marfanoid body habitus, Cut. lesions neuromas
CVS, RS, CNS → Look for end Organ damage.

P/A.

Inspection → Shape, umbilicus, fullness, Quad Movement. Scars, Sinuses, any Striae, truncal obesity

Palpation → tenderness, Mass, HSMegaly, Organomegaly,

Perc / Ausc → normal

Hernial Orifices → Free.

In case of flank Mass → examine like : [page 4].

External genitalia

DD PCC adrenal/extradrenal Thyrotoxicosis, anxiety neurosis, CKD

Male : pubic hair,
Penis → length, Midline, Prepuce +/-
Scrotum → Rugosity, development feminisation ACC
Testis - both ⓝ → testicular atrophy

Female : Labia Majora / Minora - @
EUM - @
Hymen, any discharge.
Speculum → Pelvic Vag. examination

DRE. Anal tone, Rectal Contents, Male - prostate

Back & Spine — Normal

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Resident In Urology
Date :

Now
- Familial → 30% (EF)

* PCC - 10% tumor - extraadrenal → 25%
- B/L, Paediatric, Malignant

* Incidentaloma - % of total PCC = ACC = Cortisol excreting adenoma = 5%
* Malignant PCC - only defined by ↑nce of Clinical metastasis → more in ~ SDHB mut. extradrenal
* PCC more on [Right], tend to be larger, recurrence more
* Mutation in SDHB → very high risk & malignant
* M.C. Symptom - ~~HTN~~ Headache → Palpitation → HTN → Sweating

PREOP Preparation - All Cases ☺ evaluat^n mandatory

α# - Phenoxabenzamine - Non selective, most commonly used
Irreversible #, $T_{1/2}$ 24 hrs, Start 10mg BD → 25mg TDS
7-10 days Prior to Sx
until BP 120/80 in Seated posit^n, Usually adult 1mg/kg (child 0.2mg/kg o.d (max 10mg/day))
↑ dose until ORTHO HYPO (indi. adequate #)
↳ omitted on morning of DOS

DPT (Doxa + Pra + tera)zocin - α_1, reversible, Shorter acting, so can be given on day of Surgery, No reflex tachycardia

(mild postural hypotention c̄ SBP of 80 mmHg is acceptable)
Adequacy - HOW
No/MILD Postural hypoT. & Nasal Congestion
10% fall in PCV
BP
Cardiac arrythmia

↓ Adequate α# - then add
β# - Non Selective - Ppnl / Metoprolol [Bervarin in COPD]
β_1 ☺ Selective - Atenolol / Bisprolol
- CI in Catecholamine Induced CMP
- Target HR 80

ROIZEN CRITERIA ① No in hospital record^s of BP > 160/90 for 24 hrs pat to ~~adm~~ operation ② No orthostatic hypoT. c̄ BP < 80/45 mmHg
③ No ST/T wave changes x 1 week prior to operation
④ No > 5 premature ventricular contraction / min

other - Fluids 4L/day
Extra Salt 15 gm/day
Start on 2nd/3rd day after starting α# [prevent orthostatic hypotent^n expand Blood volume]

other drugs CCB

ANNV	Amlodipine	Nicardipine	Nifedipine	Verapam
mg/day	10-20	60-90	30-90	180-540

Metyrosine - # TH (tyrosine hydroxylase)
Tyrosine → L-DOPA [SE - Exh S/S]
Atleast 3 days are necessary to acheive full
∘ Reserve drug if BP is not controlle
∘ or for Metastatic patient

Intraoperative M/m: 1 arterial line / 2 Peripheral line / 1 Centre line ↳ Rapid volume expansion / Hydrat^n / NG or SN / admi of Vas
CCB, $MgSO_4$ (cont. mg drip) Esmolol / Phentolami
Sedation / Anxiolytic - Midaz / fentanyl
Measure to prevent Intra op. HT
Deep Anaes Short act^g op Preop fluid th
Fluids
Induction - Etomidate / Propofol (No Ketamine)
Maintainance - Sevo / Iso (No Halothane / Desflurane)
Premed - Domperidol (No metachlopromide)
Pain - fentanyl
Sod Nitro Nitrogly

After Adv. Vein Cl
↓
HYPOTENTION
SNP (0-5 μg/kg/min) - M.C. used
α# - Phentolamine
β# - Esmolol / Labetalol
$MgSO_4$ - ↓ Ca^{++} release, α#)
So - Stop SNP drip
- ↑↑ fluid (Gluco
- Phenylephrine drip
- vasopressin

SURGICAL POINTS: MINIMAL HANDLING, Cont. Anaes Communicat^n low pressure pneumoperitoneum

Date :

Postop Hypotention is common if phenoxabenzamine is given for α #

Hypoglycemia - Preop ↑ Catecholamine → ↑α_2 Stimulation → # Insulin releas

So after tumor removed, No Catecholamine → ↑↑ Insulin rele → Hypoglycemic

If -ve repeat @ 6 Mon → lifelong F.U.

F.U. → After 2 weeks ⇒ Metabolic testing ⇒ If Persistant Ted

try metastatectomy ← (+) MIBG Scan ← Metanephrine

OR

Give I-MIBG therapy (I-131)

+/- CVD (Cyclophosp / Vincris / Dacarbazine

LUTS patient

CASE DISCUSSION 11

CA Prostate / BPH / LUTS

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Resident In Urology

Date

* LUTS - Obstructive → Hesitancy, Poor stream, straining, Dribbling, overflow/incontinence
Irritative → Urgency, frequency, Nocturia, Urge Incontinance
IUNPISS / IPSS / Bothersome score, H/O Suprapubic fullness
- any medication → Improvement / worsening
- any known PSA value / Interventⁿ (Bx)
- any H/o dysuria, Nocturnal Incontinance - Overactivity as same D.O. (suggest element of bladder can tnt as urgency in day time → so pt should be warned that post op there can be leak (post TORP)

* AUR - when
Painfull / Painless
Interventⁿ (PUC/SPC) - ν of Change of Catheter
Stat output (amount of urine drained)
Recieved any medication
Spontaneous / ppt
H/o prior LUTS
→ H/o Intake of Sympathomimitic / anticholinergic
→ H/o Painful perineal condition
→ H/o Anaesthesia
→ H/o drinking large quantity of fluid
→ H/o Alcohol binge
Any TWOC

H/o iteology

1. Cystitis - Dysuria, Pyuria, fever, Suprapubic pain, hematuria

2. BEP

3. CA Prostate : Hematuria, Constitutional Symptoms - loss of weight / apetite,
H/o local spread - Perineal heaviness, Rectal Symptoms
H/o Metastasis - backache, cough, Chest pain, jaundice

4. ~~Iteology~~ Stricture : H/o prior Intervention
trauma, urethritis, STD - Young, Sexual promiscuity
urethral discharge, Instrument, Catheter

5. Stone dis : flank pain, Suprapubic pain, Dysuria
Bladder Stone → Lithuria, Hematuria

6. Neurogenic bladder : Storage symptoms, DM,
trauma to spine, previous, back surgery,
constipation, erectn,

7. Drugs : Diuretics, anti HTN, anticholinergic
Injections, anticoagulants, α-Sympathomimitic
↓ for CA [SC or IM]

8. GUTB

Prostatitis - Pain after Intercourse, Perineal pain, LUTS

H/o Complication :

1. UTI - Burning micturation, fever
fever, Scrotal Swelling

2. ARF / CRF - facial edema, Pedal edema, total urine output, nausea, vomiting,

3. Metastasis - Paraparesis, backache, Pedal edema
(L.node mets), Gait disturbances
urinary / fecal Incontinance

Past : Co-morbid condition [life expectancy]

Personal : Smoking, addiction, (Sexual history) ↓ LIBIDO
DRUG history
↓ of coitus, IIEF, morning erection
To decide type of T/t

Family : CA prostate - father 2.2 / Brother 3.3 / 1° 2 members 5.5
BEP
Stone disease

CKD - Dry Skin / Brittle Nails

Examination : Supraclavicular node, Pallor
Performance Status, Pedal / facial edema
ORAL EXAMINATN - If pt. on Zolendronic Acid or Planned to
P/A - SPC / Bladder full / organomegaly
dialated veins

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Resident In Urology

Date :

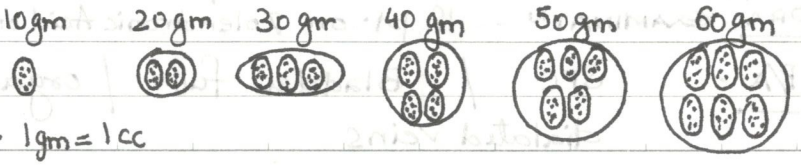
E.G. : Prepuce, Skin, Shaft, Penis, Induration
Meatus, Circum/not Bx0 +/-
Any discharge, PUC +/-, hygiene

DRE : Inspection - Hemorrhoids, skin tag,
Anal fissure, any skin (Perianal skin changes)

Palpation : Anal tone, hemorrhoid, peri
anal sensation, rectum loaded / empty

	Prostate Grade		DRE ↓	DRE ↓	DRE
(N)	20 gms	Chest nut	Min perceptive	0-1 cm Into rectal lumen	Easily palpable
1	25	Plum	<¼ of Rectal lumen 25%	1-2 cm	1. Easily palpable 2. Can go above prostate but c difficulty
2	50	Lemon	<½ of Rectal lumen 50%	2-3 cm	
3	75	Orange	¾ of Rectal lumen 75%	3-4 cm	Can't palpate upper border even c difficulty
4	100	grapefruit	fill entire lumen 100%	>4 cm	

tender / non tender, Consistancy, nodule
Sulcus - medial < Palpable obliterated, lateral borders
get above, Sr palpable, Overlying mucosa
mobile, finger Stained +/-



· 1gm = 1cc

Dr. Ankush Jairath
Resident In Urology

Date :

Back & spine & CNS → R/o Neurogenic bladder

AGE sp. PSA	Oesterling et al
40-49 yrs	0-2.5 ng/mL
50-59 yrs	0-3.5 ng/mL
60-69 yrs	0-4.5 ng/mL
70-79 yrs	0-6.5 ng/mL

CYSTOSCOPIC GRADING

USG	Lateral Lobes	Intraurethral middle, dorsal portn of lat. lobes	Intravesicle, mi & dorsal portn of l
<25 gm	Concave lateral prostatic urethral walls	1-2 cm betn veru & prostatic border	Doesn't cover trigone
25-40 gm	lateral lobes bulging in lumen but not KISSING	2-3 cms	Covers upto ½ TRIGONE
40-60 gm	KISSING IN MIDLINE	3-4 cms	Covers ½ to a TRIGONE
60-90 gm	Overlapping x 2-3 cms	4-5 cms	Covers more TRIGONE
>90 gm	Overlapping > 3 cms	>5 cms	Extends upto Fundus

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Date :

Cause of Nocturnal Incontinance : 1. Supperessed ADH levels @night
Night time → Pt lie down → E.C. Fluid Shifts Into I.V. Compartment → ↑ venous ↓ ADH ← return
2. Sympatholytic effect on Ext. Sphinter
3. ↓ed Alertness

Hard Nodular Prostate : CA / TB / Granulomatous / Chr. Prostatitis / Ca^{24}
In CA it suggest locally advanced disease (only involved area hard)

NODULE	VS	CALCIFICATION
• Always perepheral		• At junctn of PZ & TZ
• So can palpate on Superficial palpatn		• So always felt on deep palpatn

Role of Mp MRI IN DIAGNOSIS – Only when DRE & PSA both are equivocal then to diagnose CA prostate

Vienna Nomo **WHY 12 core biopsy :** As Studies have shown That for av. Size prostate rate of detectn by 12 core biopsy Is suffica

When U do MRI 1st before biopsy : When local Stagg Is going to decide M/m Plan i.e. type of Sx – N. Sparg or not & we can even reduce no. of cores to be taken

SV Involvement – Direct – Prognosis not that bad
via ED – means already Systematic dis

In Which Cases U do Metastatic Work up 1st : 1. High PSA >200
Do CT – to see nodes, rather than MRI 2. CT Showing +ve nodes
3. Bone Scan ⊕

PSA Density = $\frac{\text{PSA}}{\text{Prostate Volume}} = \text{PSA} / (L \times B \times H) 0.52$

or **PSA Velocity** = Change In PSA over time ng/mL/yr

PSA doubling time Different PSA Value Is feeded w.r.t. different time Interval Into a Combuter Software (founded 1st by John Hopkins Institute) & Sloan Kettering NORMOGRAM

ROACH EQUATION

SV Involvement	L. Node Inv.	Extra capsular Ex
PSA + ([Gleason-6] x10)	$\frac{2}{3}$PSA + ([G-6] x10)	$\frac{3}{2}$PSA + ([G-3]
RISK	RISK	
<13% ⇒ 7%	<15% 6%	= actual Ris approx.
>13% ⇒ 37%	>15% 40%	

	HGPIN	ASAP	ASAP + HG
Incidence	0-25%	5-15%	
Risk for CA On Rebiopsy	20-30%	40-60%	35-75%

• **Av. Core length :** 1.5 cms (aim to get both Glandular & Stroma

• **CHAARTED** (Chemo Hormonal therapy vs Androgen Ablation R Trial for Extensive Disease) & **STAMPEDE** (System Therapy In Advancing or Metastatic Prostate Cancer : Eval of Drug Efficacy)

	CHAARTED		STAMPEDE (20
2. Groups	① ADT ② ADT + DOC	Dif.	4 Groups – ① Std of Care (SO ② SOC + Zolendric acid (ZA
OS – 32 / 49		17 months	③ SOC + Docetaxel (DOC)
PSA<0.2 @ 6 month		P<0.0001	④ SOC + ZA + DOC
@ 12 months		P<0.0001	OS = 71 mon / 71 mo / 81 mon / 7
Med time to CRPC		11	AE = 32% / 32% / 52% / 5
med time to Clinical Progression		11	So fit pat. – Add DOC to SOC
Med tim to Rad. Progres		11	Zolendronic acid No behefit

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Date :

MP MRI:- T_2 + Diff. weighted Image (DWI) or DCE (Dynamic contrast enhancement)
or MR Spectroscopy

Role - AS / N. Sparing / HIFU dose escalatn / Rx /
Biopsy -ve but ↑ PSA

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Resident In
Date :

Role of CIC Prior to TURP – In LPCR, as it may allow recovery of bladder contractality

- **Urine Cytology Indication :** Hematuria, Severe Irritable symp dysuria
- Routine S.Cr measurement in Std pt. is not recommended (AUA Guidelines)
- **Uroflow guidelines in BPH :** Flow measurements are inaccurate if voided volume < 125-150 ml., Q_{max} is better than $Q_{Av.}$ Pt c PFR > 15 ml/sec before Sx ⇒ Poorer T/t outcomes. PFR of 15 ml/sec doesnt diff betn obstructn or decompensation
- **UT Imaging :** Not done routinely, Indicated if one or more Hematuria, UTI, Renal Insufficiency, H/o Stone dis, H/o prior urinary tract surgery
- **PSA :** If Life expectancy > 10 yrs In any case of LUTS do PSA PSA contributn from BPH is 0·30 ng/mL/gm of tissue whereas it is 3·5 ng/mL/Cm^3 of cancerous tissue
- **Watchful Waiting :** Indi Mild Symptoms, mod to severe symptoms but no complicatns of BPH
- **FLUID DYNAMICS →** 60 cm ideal height ⇒ 300 ml/min is available Irrigation fluid for good vision
  - 20 ml/min is fluid absorption ⇒ 1 litre in 1 hour (approx) ⇒ ↓ S.Na by 5-8 mmol/L, when it reaches 15-20 meq/L below (N) level S/s appear 0·9% = 154, 3% 513, N/2 - 77
  - Av. blood loss during Sx is 10 ml/gm of prostate resected
  - Donot raise 'Na' > 25 meq/L in 1st 48 hrs [≤ 2 meq/L/hr] Target 120-125
  - Na deficit = $\frac{\text{Body wt}}{2} \times (125 - Na)$ ⇒ for men
  - Hypertonic Saline (3%) @ 1-2 ml/kg/hr. + Furosemide

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Date :

Indication for diversion: Ab(N) Renal F(n), UT dialatatn, Symptomatic or Complication of low pressure Chronic retention

SPC Advantages: Sexually active, low pressure TURP, ↓ Chances of epididymo-orchitis, ↓ Stricture rate, Better pt. acceptability, less trigonitis

UDM c LUTS: Suspectg Neurogenic bladder, Very Young <5o very old >80yrs, Inappropriate uroflow, PVR >300 ml, Previous failed Sx, DM, Predominant Storage Symptoms Qmax >15 mL/s (equivocal poor flow), Pelvic/Spine Sx

Causes of frequency In BPH: DO, Residual urine, ↑ product° night Stone, Infection, leakage In post. urethra ⇒ Pt feels like urinating

Elderly < c ♡ RISK - SILODOSIN
c out ♡ RISK - TAMSULOSIN

Choice of Med Tx: Young < c ED - TADALAFIL
c Anejaculatn Risk ALFUZOCIN

Predom. Nocturia - Naftopidil

GOLIATH STUDY: 180 W XPS Green light laser Vs TURP - 6 mo Safety & efficacy

XPS = TURP In terms of IPSS, Qmax, Complicatn

XPS better than TURP @ 3 months reintervent° rate

XPS = TURP @ 6 months reintervent° rate

POST TURP PUC⊖ ⇒ RETENTN → Painless → CUR → Put PUC x2-3W → Again Retentn → CIC
↓ Painfull → Stricture, Residual Gland, Edema, Clots/Chips, large bladder diverticula, Missed bladder Calculi

How to prognosticate c out doing UDM before Sx whether postop pt will Pass ur

not:
- Bladder Spasm to PUC
- Sensatn ⊕ on Intermittent Clampg
- Overall good general Condition
- <500 ml Stat output
- Tense bladder recover fast

} All good prognostic factors

Case scenario 4 - BPH

To/M — Poor flow / hntermittency / hesitancy x 5years
AUR 5 days back → PUC 500 ml
↓ 3 days Medicatn
failed TWOC
3 yeaus back orchitis → Med x 3 months

-ve history
Relevtn PH
Incordinance
Constipation
Medichtion
Hematuria
Straingury pain
Sexual history

DRE - Grade III gland (Can't go above it)
DD - BPH / CA prostate / Bladder Stone / large bladder diverticula

Hematuria In BPH (microscopic)

Investigatn to totally different if Hematuria is present
- Large gland - vascular (least possibility)
- Inflammatn - UT malignancy
- Kidney Stones - LT malignancy

Indication of PSA In Case of BPH

After PUC & AUR how long U have to wait for PSA

Yes — Young pt.
- Any suspicion In DRE
- Family history of CA prostate
- life expectance ≥10 yrs

Not do → life expectancy <10 yrs Age

HOW LONG TO WAIT

Cystoscopy → 1 week
Prostatic massage → 3 days.
PUC / DRE / ejaculatn → No need to wait else 24-48%.
TURP Biopsy → 4 weeks

1 week

Indication for diversion: Ab(N) Renal F...

...full → Stricture, Residual Gland, Edema, Clots/Chips, large bladder ...eticula, Missed bladder Calculi

to prognosticate ĉout doing UDM before Sx whether postop pt will pass u...

- Bladder Spasm to PUC
- Sensatn ⊕ on Intermittent Clamp
- Overall good general condition
- <500 ml Stat output
- Tense bladder recovers fast

} All good prognostic factors

Q. Why U have to wait for 1 month in biopsy while 48 hrs after PUC

↓ Not ~~direct~~ ~~rupture~~ of acini

↓ Traumatising acini

~~TWOC after Starting α-blockers~~

TWOC

1 day — 20%
2 days — 40%
3 day — 50%
>3 day — 60%

Cause of Poor flow

- ↑ Sympathetic tone
- Stomal ↑ → ↑ resistance
- large gland → ↑ prostatic ↑ Resistance ← urethra length

Q. Chances which indicates good Chances of Good postop flow

- AUR
- Response ĉ α #
- large median lobe

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Indication for diversion: Ab(N) Renal F-

full → Stricture, Residual Gland, Edema, Clots/Chips, large bladder
eticula, Missed bladder Calculi

to prognosticate Cout doing UDM before Sx whether postop pt will Pass u

- Bladder Spasm to PUC
- Sensatn ⊕ on Intermittent Clamp
- Overall good general Condition
- <500 ml Stat output
- Tense bladder recover fast

} All good prognostic factors

In general never done to find out need for treatment

Q. Will U do Cystoscopy before open Prostatectomy

To be done In all Cases

To see bladder details → Bladder mass
→ Degree of trabeculat
→ Capacity of bladder
→ Bladder Stone

Absolute Indicat
- hematuria (microscopic / gross)
- Bladder Stone / diverticula
- urethral Stricture disease
- Prior urinary tract Sx (TURP)
- IRRITATIVE LUTS

Causes then will be ← Important
- Good Capacity
- No Trabeculation

↓

Think whether Prostate Is cause of his Symptoms

- old age (UAT)
- Medication (antipsychotic / cold cough)

(X) In BPH P/R is fallacious as only posterior part we Can palpate

(✓) TRUS OR NO TRUS ⇒ Indicat In BPH
- Borderline high PSA
- Borderline Size of Gland ~ 80 gm ← open TURP → To access accurate size of the Gland

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- DRE Nodule (+) PSA ~~Nodule~~ Normal] Do Biopsy

- Prostate Size Is measured through full bladder window

- TA USG → not accurate

Prostate lies behind pubic bone where as In TRUS it Is approached from behind where there is no window problem & from sideway & not from top (as In TA-USG)

- Moreover 3.5 MHZ probe will not pick up vs 7.5 MHZ

Indicat° of UDM In △ed C/o BPH

1. Too Young c LUTS
2. Too Old (always a Component of UAD) >80yrs
3. Predominant Irritative LUTS → Urgency, Nocturia — OAB
4. Past History of failed TURP
5. H/o Neurological dis / PD / Stoke / DM
6. H/o Pelvic Surgery / Spine pathology
7. CUR c Low pressure

nfull → Stricture, Residual Gland, Edema, Clots/Chips, large bladder
reticula, Missed bladder calculi

to prognosticate c out doing UDM before Sx whether postop pt will Pass u

- Bladder Spasm to PUC
- Sensat° (+) on Intermittent Clamp[g]
- Overall good general Condition
- <500 ml Stat output
- Tense bladder recover fast

} All good prognostic factors

8. BPH c long Stand^{g} DM ∵ along c BPH there can be component of UAD

9. where O^{sis} is not Certain — many Condition

F.U. TURP → How much Symptomatic improvent
- IPSS
- UROFLOW c PVR
- Any Infect^{n} / UT (resected near U.O.

No role of urine R/E → ~~TURP~~ in 1st 3 months FU
↓ If no symptoms

(µ) Persistant hematuria has to be checked – V dmp @ Taken c Suspicion ≥ 2 months

Causes of pos. hematuria (asymptomatic) in FU Case of TURP)

1. UT/LT malignancy (∵ PUC → edema of bladder/median lobe)
2. 2° Hge (Infect^{n} in fossa) → more in HTN pt. where vessel (atherosclerotic) don't contract.
3. ~~Inadequate resect^{n} (residual lobe)~~ → persistant Infect^{n}

Stricture, Residual Gland, Edema, Clots/Chips, large bladder
, Missed bladder Calculi

gnosticate c out doing UDM before Sx whether postop pt will Pass ur

adder Spasm to PUC	• <500 ml Stat output	All good prognostic factors
sat^{n} ⊕ on Intermittent Clamp^{g}	• Tense bladder recovers fast	
rall good general Condition		

CKD+Cal

CASE HISTORY 12 - CKD c̄ Stone

Date

C/C

Flank Pain : Type, onset, progression, duration, Severity, Intermittent / Continous, relief c medicatn, able to carry out (N) activity

Dull Colicky Radiate < ant. towards umbilicus / lower quadrant

DD

Inflammat'	Obstruct'	Neoplasm
APN	Stone	Benign
Abscess	Stricture	Malignant
Injury	Clots	
Herpes	Rib pain	Pleuritis

Ass c̄ flank fullness, hematuria, Lithuria

Pyuria, fever, LUTS (Nocturia In CKD)

CKD :

↓ output (24 hrs, oligoria / Anuria)

Apetite, N/V, hiccups, dyspnea, edema, wt. change, mus. cramps, Mental acuity (URGSMSIC)

Pedal edema, facial puffiness

Easy fatiguebility, Lethargy, anorexia, N/V

LOW / LOA, Intractable hiccups, breath° problem

Uremic feter, itching, pruritis

H/o bleeding tenderness < Spontaneous / After Procedure

H/o Sleep apnea (vol. overload)

↑ BP, itching, Mensural Irregularity (oligo)

H/o Dialysis :

Number, duration, type, Access via

Permanant / temporary, Last dialysis

At tmt on dialysis or not

H/o INTERVENTN

PCN/DJ : Output (each side), from Per urethra

Nature of drained fluid

PCN / DJ related Symptoms

Any Increase in 24hrs output from day 1
What & how much it drained on just putting PCN

In Child : Height, weight gain, bone deformity (richets)
Growth pattern, feeding, milestones, failure to thrive

Adult : H/o Erectile dysf(n), loss of libido] CKD
Sexual activity, Infertility
Joint pain (↑ uric acid)

H/o Stone disease in past / H/o any Intervent" in past

Past History : H/o Stone dis / IIIrd complaints / Sx Intervent"
H/o DM / HTN / TB / COPD
↓ Durat"n, ↓ controll c medication, end organ damage

Personal H : Drugs → Diet, Smok^g, alcohol, addict", bowel habits
family H : Married, Children, Sexual activity
H/o CKD, H/o Stone in family (Indicat^ for Metabol workup)

Mensural H : CKD ⇒ OLIGO / Amenorrhoea
Cycles ⇒ Regular / Irregular
Excessive bleed^g

Drug : Analgesic abuse
Anticoagulants, ACE-I

Examination : General

Oral :- Edema (vol. overload) - tongue ed
teeth Indentation marks on

Build & nourishment - Adult - BMI
Child - Ht./Wt./Stunte gr

BP - Imp
JVP, Pallor, C⁻, CL⁻, LAP, PE (pitting)
facial puffiness, dry skin, brittle nails,
Pruritis ⇒ Scratch marks, Sallow appearance,
uremic frost, hyperpigmentat", If dialysis ⇒
See IJV, fistula, Corneal deposits, hairs ⇒
Spouse & brittle hairs

Systemic CVS - Pericardial friction rub, C
(Indication for dialysis)

Resp : Pleural effusion / ↑ Pulm edema
CNS : Muscle twitches, Muscle cramps,
restless leg syndrome, Peripheral Sm
neuropathies, encephalopathy, coma,
Seizures

P/A : Inspect" : Shape, umblicus, fullness, qu
mor, scar, dialated veins.

Date :

If PCN - Side, U/L or B/L, foley / malecot, number, drain^{g} fluid / urine, amount at that time, Surround^{g} Skin, if bandage +/-

Palpat^{n} :- Tenderness, Mass, organomegaly, PCN Side tenderness, Induat^{n}

Percussion
Auscultat^{n} - Ascites / Bruit

E.G. - female
- Labia Majora / Minora
- Vagina Mucosa - Pink/atrophied
- EUM → (N)
- Prolapse (Cysto / Recto)
- any SUI
- Tenderness / Mass palpable

DRE - ✓

DD - B/L flank pain
- B/L Stone dis
- B/L PUJO / ureterocele / Reflux / Megaureter
- Recurrent Pyelonephritis
- B/L Simple Infected Cyst / ADPKD
- CaCx

Date :

- At what S. Creat level one should operate to take out stone if CKD Status & S.Cr. ↓ing after putting PCN / DJS ~ 3 mg/dL
- Always try to do dialysis before Sx rather than after Sx as during dialysis we have to give heparin so chances of bleed^{g}
- In CKD go slow as there is always ↑ Chances of Infect^{n} (due to ↓ generalised Immunity) & bleeding (deranged coagulat^{n} profile) So complete procedure in stages & preferably remove PCN after 3 day if pt. asymptomatic
- Adjust ab dose A.T. GFR
- Suppose there is serial ↑se in S.Cr after Stone removal in postop period Possibility - Hematuria ⇒ Blocked DJS
  - BPH in > 60 yrs (Get uroflow)
  - If USG ⇒ HN ⇒ Suspect DJ #
  - fever ⇒ AKI 2° to Infection
  - Bladder Spasm ⇒ Reflux ⇒ Rise in S.Creatinine
  - Uncontrolled HTN / DM / Stricture } Causes after ~ 3 months
- Post deobstruct^{n} U.O. / diuresis will determine recoverability of Kidney function - most Imp. Criterion
- Nadir S.Cr - lowest S.Cr. level possible / acheived ∵ last 2 Consequtive Same Creatinine level

* PCN fluid Analysis → Sp. Gravity (ability to conc. urine)
  → Cr.Cl

* Put PCN
  - High pressure
    - All obstruct^{n} in f(x) Kidney in begining is always high pressure
      ↓
      Recovery is fast ∵ its still in transient phase & Indicates ↑ recoverability
    - over a period of time eventually become L.P. (even obstruct^{n} remains same ∵ of opening of)
      - → Pyelovenous Channel
      - → Pyelolymphatic Channel → Poor prognosis for recovery
  - Low pressure ↑

* Sterile Pyuria - (25%) GUTB / Gonorrhoea / ureaplasma urealyticum
  Virus - HPV / CMV / BK virus Fungal - Ca. albicans
  Parasite - Trichomonas Vaginalis, Schistostoma hematobium
  CTD - Kawasaki, SLE, Sarcoidosis
  Misc - Radiation / Stones / foreign body / VUR
  Urinary fistula / PCKD / Prostatitis / Stents
  Papillary Necrosis (analgesic Nephropathy, SCD, DM)
  Tubulo Int. dis. (Interstitial Nephritis, lupus, Tx rejection)

* DJS not coming out after Sx? Encrustation, Residual Stone in ureter, up migrat^{n} of DJS (∵ of edema U.O. not seen)
  Duplex moeity, Kink (↑) in Stent

- In case of B/L Stone which Side 1st - Better functioning, Symptomatic side, Simplicity of procedure, obstructed kidney (most imp)

- Causes of Persistant turbid urine (from PCN) - Poorly f(x) Kidney, Inadequate decompression, Staghorn / Infected Stone, Fungal Infection, Resistant organism to empirically started ab.

- Principal of T/t - Broad spectrum ab, Staged procedure, Prepla & multiple tract, BT, Slough material to be sucked out as lithoclast may not be effective, flexible scope @ end of proc to see all calyx (as stone may not be visible on X-ray), Check nephroscopy to ensure complete Clearance

- How to decide posit^{n} & no. of PCN: Based on no. of Stones, X-ray (AP obli USG, Glide wire going / not, Put contrast, No residual HN, Stones moving or not, Aspirable contants (fluid should come out

- Reason for loss of CMD / ↑ Cortical Echogenecity in CKD:
  (N) Cortex: Hyperechoic (mainly Glomerulus), Medulla - Hypoecho (Pyramids, loop of Henle
  Sinus fat: Hyperechoic
  CKD Glomerusclerosis + Interstitial fibrosis ⇒ ↑ Cortex echogen
  Tubulointerstitial dis ⇒ loss of CMD

Neurological S/S → due to retained Nitrogenous Compounds & ↑ PTH

1. Myopathy
   - Hiccups
   - Cramps
   - fasciculatn
   - twitching
   - Asterixis
   - Myoclonus
   - Chorea
2. Central
   - Sleep ↓
   - ↓ Memory
   - ↓ Concentratn
   - Seizures
3. Peripheral
   - ↓ @ > CKD ≥ 4
   - 1st Sensory → Motor
   - LL > UL
   - DISTAL > Proximal
   - Restless Leg Synd.

4. Autonomic
   - ↓ BP fluctuat"

Indicat" of Start of RRT

GIT — Uremic Fetor (urinferous odor to breath)
urea —In Saliva→ NH_3 → breath + Metallic Sensatn
Gastritis, peptic dis, mucosal ulcuation

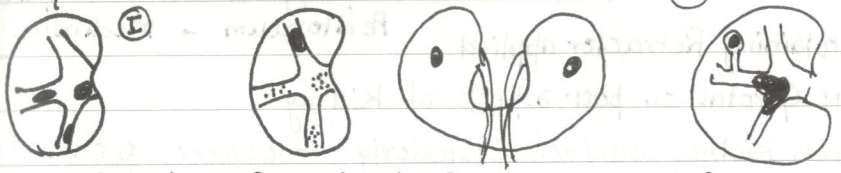
Endocrine :
↑ Insulin but Response to Insulin les
↑ Glucagon
↑ LH ↑ Prolactin ↓ EPO ↓ VIT-D

SKIN :
Pallor, Ecchimosis / hematoma,
uremia ← Pruritis, excoriatn (2° PTH)
Uremic frost (deposit" of urea)

Instructions to pt :- (1.) Fluid Intake > 3L so U.O. of > 2-2.5 L/day
(2.) low Sodium diet (↓ Ca salts Crystallisation) (3.) Weight reductn
but not low carbohydrate / high protein diet ⇒ ↑ acid load → ↑ Stone formatn / ↑ Bone loss
(4) (N) Calcium / if Ca^{2+} supplements then take Ca Citrate
(5) Low Oxalate diet (avoid high Vit-C doses < 2g/day else ⇒ Oxalate ppt.)

Staghorn

Guys Score :-



(I) Solitary Stone In
- Mid / Lower pole
- OR
- Pelvis

(II) Solitary Stone In UP
Multiple Stone In MP/LP/Pelvis
Solitary In Ab(N) Anatomy

(III) Partial Staghorn
Stone In diverticulum
Multiple Stone In Ab(N) anatomy

(IV) Staghorn Calculi
Any Stone In Spina bifida or Spinal Injury

Stone free rates
- I - 81%
- II - 72%
- III - 35%
- IV - 29%

Radiation Exposure

		In Pregnancy
Natural :	3 mSv / year	0.5 mSv allowed (EVA)
X-ray Abd :	8 mSv	
NCCT :	15 mSv	
CECT :	30 mSv	

Staghorn Nephrometry Classification : UC Ston% Volume

Type 1	<5000 mm^3	<5%	ST, SS
Type 2	5000-200,000 mm^3	5-10%	ST S/MS or MT
Type 3	>20,000 mm^3	>10%	MT MS

Anatrophic Nephrolithotomy

Posit^n. Flank posit^n Incision - 11th rib Incision

SKIN → SUBCUT → LD/EO/IO/ → Diaphragm & Pleura – Mobilised Superiorly
Peritoneum - Medially

→ Self retaining Retractor applied
→ open Gerotas on post. aspect of Kidney
→ Reach Kidney Surface posteriorly → dissect & encircle ureter / RA / RV → Dissect near hilum for Post. Segmental artery → Can use USG that can provide Info about Stone location & direct nephrotomy OR

Smith & Boyce / Occlude Post Segmental br. temporarily
↓
Give Methylene blue → Blanching of Post. Segment
↳ Rest Blue Colour
↓
Remove Bulldog
↓
Occlude Main Renal artery
Place Iced Slush for 10min
↓
DO NEPHROTOMY
↓
Parenchyma bluntly separated using brain spatula / Scalpel handle until Calyx is identify & exposes Stone
↓
Manupulate to remove Stone

Others → Mansj → No need to dissect @ hilum

Enlarge ↓ Nephrotomy if needed
Rest of multiple Stone removed c forceps

If bleeding ⊕ ↓

- Extented Pyelolithotomy
- Plane - Subparenchyma bet^n Parenchyma & Calyx
- Transvesical VVF Repair

is CT imaging with three-dimensional reconstruction[1,2]
- Stone position and burden (stone surface area – can predict outcome)
- Planning access for PNL
- Detects relationship with adjacent organs and aberrant anatomy
- Thickness of parenchyma overlying the stone
- Detects radiolucent stones
- Less observer dependent

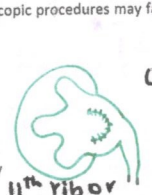
- 3D CT Urography: invaluable in planning punctures for complex staghorns or ectopic/horse shoe kidneys[2]
- Staghorn Morphometry - 3D CTU with a 3D software: classifies staghorns into 4 categories based on stone burden and unfavourable calyx (1,2a,2b and 3). It predicts success of PCNL and required ancillary procedures[3]

Indications of open surgery[4,5]
- Anatomical abnormalities - infundibular stenosis, diverticuli, PUJ obstruction, stricture
- Concomitant open surgery/complex stone burden
- Cost considerations and need for single-stage clearance – patient choice
- Co-morbid illness, skeletal deformities
- Morbid obesity
- Non functioning lower pole, or non functioning kidney
- Ectopic kidney where endoscopic procedures may fail
- Failure of ESWL/PCNL

Operative procedures
- Simple pyelolithotomy
- Extended pyelolithotomy
- Pyelo nephrolithotomy
- Radial nephrolithotomy
- Anatrophic nephrolithotomy

Simple Pyelolithotomy[6]
- For 1-2cm pelvic calculus
- Two stay sutures of 4-0 polyglycolic acid or chromic catgut.
- U-shaped (Bucket handle) incision in the renal pelvis.
- Incision must not extend through or into the ureteropelvic junction because of the risk of subsequent scarring.
- Pelvis should be closed watertight with continuous 4-0 polyglycolic acid or chromic catgut suture.

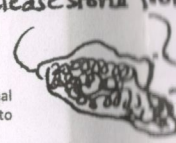
R/o any ureteric Stone

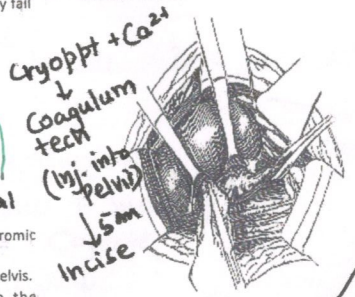


Radial
- For Calyceal Cal not amenable to pyelolithotomy
- Small (1cm) radial incision over Stone localised by palpation or needle or USG

Extended pyelolithotomy[6]
- Stone in the renal pelvis and multiple extensions into calyces.
- Contra-indications:
  - Prior extended pyelolithotomy
  - Extremely intra-renal pelvis
  - Staghorn calculi in clubbed calyces
- Thin layer of connective tissue extending from the renal capsule into the fat in the renal hilum and then onto the renal pelvis.
- Incise this layer to gain access to the infundibulum
- Subparenchymal dissection exposing the renal pelvis and calyceal infundibula- Gil Vernet
- An incision into the renal pelvis and extended in a curved fashion into the necks of the superior and inferior calyces

1st release Stone from PUJ





Pyelonephrolithotomy[6]
- Large stones in a lower calyceal system
- Continue pyelolithotomy incision into the lower infundibulum and then onto any involved calyces
- Leave a stent and close infundibulum and pelvis with a

...ghorn Nephrometry Classification : UC Ston% volume

1	< 5000 mm3	< 5%	ST, SS
2	5000 - 200,000 mm3	5-10%	ST S/MS or MI...
3	> 20,000 mm3	> 10%	MT MS

...renchyma bluntly separated using brain spatula / scalpel handle until Calyx is identify & exposes Stone
↓
Manipulate to remove Stone

↓
Enlarge Nephrotomy if needed
Rest of multiple Stone removed c̄ forceps

If bleeding (+) — Occlude Renal Vein
↓ Repeat Imaging
→ Take Separate Incision if needed

Repeat Imaging:
- Residual Stone mostly behind Stenosed Infundibula
- No Stones → Pass guide wire via PUJO into bladder → Double J Stent → Closure

Closure:
- Vessels → ligated c̄ abs 4-0 – 6-0 Suture
- Remainder of Collecting System → 4-0 or 6-0 abs monofilament
- Calyx → Closed c̄ 5-0/6-0 running absorbable monofilament → Calycorrhaphy / Calycoplasty

↓
Renal Capsule 3-0/4-0 abs.
- Remove Ice Slush
- Apply gentle pressure if bleeding from Capsule
- Declamp bull dog

↓
Once bleeding Stops Close Gerotas

GIL-VERNET — Retractors to see Into Calyx
GIL-VERNET — Technique (DORSAL LUMBOTOMY)
- Extended Pyelolithotomy
- Plane - Subparenchyma betn Parenchyma & Calyx
- Transvesical VVF Repair

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Resident In Urology
Date :

GCL = $\frac{U_{cr} \times V}{P_{cr} \times 1440}$ ml/min

Metabolic

24 hr ⟶ Ucreat — 15 mg/kg male
5-10 mg/kg female

Aciclify : Ammonium Cl
Methionine

urease # - Acetohydroxamic acid

Ammonium urate — Infection Stone

R/o UTI ← Ammonium Urate
Carbonate apatite

Case history 13

CA Penis

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Resident In Urology
Date :

C/C/O

Ulcerative / Proliferative growth
- Site - duration - progression (rate of gr
- ass c pain - D/c or bleeding from lesion
- ass. LUTS - Burning - hematuria
- foul Smelling / pus discharge per urethra
- H/o urinary retention / urinary fistula
- H/o Circumcision / Inability to retract prepuce
- H/o fever / recurrent UTI
- H/o Inguinal Swelling , pain , ulceration

B. Symptoms - H/o loss of weight / appetite / fatigue / Systemic mala
- H/o Pedal edema / facial puffiness

Sexual history HPV
- H/o Sexual Intercourse , erection , priapism , Chord or curv
- H/o Sexual exposure / multiple partners
- H/o relationship of dev. of ulcer to last exposure

H/o metastasis
- H/o bone pain , jaundice , Chest pain , hemoptysis, breathing difficulty

- H/o barefoot walking /
- H/o Penile / urethral reconstruct" / Stricture Sx (CI for Rx)

Past H : ✓
Surgical H : Any previous surgery , Bx , Report
Drug H : Anti coagulants
Personal H : Diet , smoking , addiction , Bowel or bladder ha
family H : Married, Children, Extramarital H/o Sexual Exp
Multiple Sexual partners

Dr. Ankush Jairath

Date :

Examination ECOG / KPS
LAP , Pedal Edema , P +/- IC ++

Combined
E.G. Inspection : Prepuce (21%) +/- Retractable +/- Glans (48%)
& Palpation Meatus seen +/- (Phimosis)
Coronal Sulcus (16%) Ulceration - Site , Size , Shape ,
Extent , margin , Surrounding skin , floor of ulcer
any bleeding / discharge (Characteristic) , number ,
any redness of surrounding skin , Tenderness ,
Surrounding skin & ulcer base - Induration +/- , Mobility
Bleed on touch , Penile shaft Induration , Urethra on
palpation (tenderness , induration , supple) , Stretched
penile length , Corporal bodies on palpation

Inguinal Region : Swelling → all Characteristic
Inspection : fullness , ulcer , discharge , Skin (peau-d-
orange , Inflammation) U/L , B/L

Palpation : Swelling / ulcer , tenderness / temperature
Site , Shape , Size , number , Surface , margin ,
Consistance , Separate matted , fixed / mobile

P/A - ✓
DRE : ✓ Any Pelvic mass | Bimanual Examination → Inv. of State of perineal body → Perineal body
Back & Spine : -

↓
Pelvic L nodes
(as in case of CA bladder)

* Always do Viral Markers (HIV / HBsAg) ...
Ca^{2+} levels (Hypercalcemia - Paraneoplastic

DD - Chancre (Ulcerative) Chancroid Genital Wart → Condyloma accuminata HPV 6, 11 [HPV UP lesion
Herpes , LGV , Buschke - Lowenstein (PROLIFERATIVE) (Verrucous C
TB Giant Condy

lab - ↓Hb / ↑TLC / Hypoalbuminea / RFT / ↑Ca / ↑PTH
Biopsy - ask for LVI +/- , poorly differentiated or not

↓ If Penile recurrence DD - Sarcoma , KS / Melanoma

Case history 14

HYPOSPADIAS

(1 in 300 males) Date :

H/o Passing urine from below tip of the penis ? by birth
- how did parents notice / by self
- where exactly Child passes urine < close to the tip / away from tip
- Ass. fistula [If he passes from tip also ? double Stream]
- How Is Stream , any Straining
- H/o any Sx (any Improvement / deterioration)
- Penis straight / bend (If adolescent then on erectn also)
- H/o Circumcision

H/o Etiology
- H/o any Syndromic association ⇒ Cryptorchdism, ARM, facial dysmorphism & microcephaly (Smith Lemli Opitz) Cleft lip/ palate - opitz G Syndrome, Seizures MR (Wolf Hirschhorn Syn)
- Scrotal & Inguinal Swelling (Hernia)
- H/o Renal agenesis / Solitary Kidney [if Known by USG]
- Recurrent UTI / fever / dysuria / flank pain VUR

Antenatal history
- Age @ conception, Antenatal USG (any anomaly)
- H/o ART use (assisted reproduct°) Placental anomaly
- H/o Drugs - Phytoestrogen / OCP / Pesticides / alcohol (Estrogen like & antiandrogen axn ⇒ Tes Risk)
- H/o DM
- ETND / Preterm / LBW / maternal age
- N Ass. c Prepreg maternal obesity / DM / HTN

Developmental history - milestones
- UTI
- anomalies

Adoloscent / adults - H/o Sexual development
androgenisatn < Nocturnal erectn / Hairs
Erection / libido
Psychosocial Impact

↓
Why not took Tt till now

[Causes of hypospadias - Androgen ↓ Estrogen ↑]

Past/Present History - Sx / Co-morbidity
- fistula / Stricture / Chordee (dev. of Penis)
- length / Glans tilt

Age / HOW / WHEN / LUTS / ? TORSION / CHORDEE / ERECTN / LUTS (R/O Distil obstruct")

Family history - If adult (married / not), Sexual hist, diet, Smoke / alcohol, addiction
(14%) Sibling (Incidence 3-5%), father ↓ 9%.
(H/o hypospadias)

Examination : Child (Playful, Imitative lethargic)
Built & nourishment
Heigh / weight for age (OK / Stunted)
Any Syndromic Malformation [MR, facial dysmorphism, Microcephaly, Syndactility, WAGR, hypertelorism, Cleft lip / palate]

Systematic - Any Syndromic ass (CVS / CNS / Resp.)

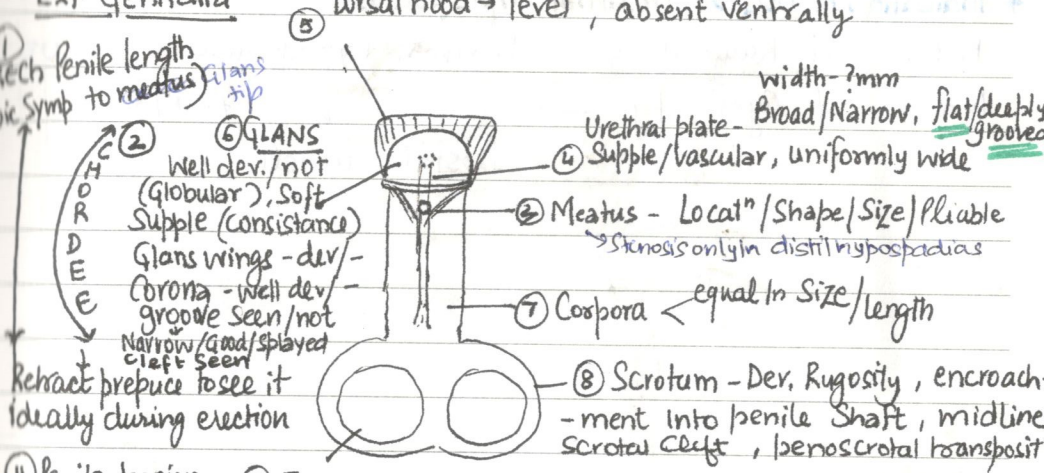
Streched Penile length - Peno pubic junction to Glans tip

Newborn, 34 weeks	3 +- 0.4	2.0
0-5 months	3.9 +- 0.8	1.9
6-12 months	4.3 +- 0.8	2.3
1-2 yrs	4.7 +- 0.8	2.6
2-3 yrs	5.1 +- 0.9	2.9
3-4 yrs	5.5 +- 0.9	3.3
4-5 yrs	5.7 +- 0.9	3.5
8-9 yrs	6.3 +- 0.0	3.8
10-11 yrs	6.4 +- 1.1	3.

2.3 (INDIA)
MICROPENIS
Adult 13.3 +- 1.6 9.3

P/A / Inguinal Hernia +/- Testes +/- (UDT)
9% by Schonfeld & Beebe 1942 J. Urol.

Ext. Genitalia
Circumcision +/-, prepuce fold Starts @ what Dorsal hood → level, absent Ventrally



11 If previous Sx → Scar / Induration, Plate, Spongiosa, fistula, Harvest Site examination

* Karyotyping → in ♌ A/W

* Early Age → repair
Proximal - 6 months
Distil - 3 months
} upto 18 months then beyond 3yrs
→ 18 mo - 3yrs Child un co-operative
→ Anxiety, after 3yrs understand Tt better (Manzoni et al 2006)

* Prep Androgen :- Only when Glans appear Small, No randomised trials,
→ Glans Width < 15mm & Penile length < 25mm
IM Testosterone enanthate 2 mg/kg 2/3 Injectn over 6-12 weeks period
Tes penile length by 0.5-3cm, Meatal advancement by 5-20mm, Tes Vasularity, CS Thick-ss

* Suture - 7o Vicryl < 6-0 Prolene < 5o PDS
absorba. Non absorb. Biodegradable

Date :

* Hypospadias in Hypospadias — Short urethra, meatus @ distile
poorly dev. spongiosa

* Indication of USG → Proximal Hypospadias

Indicat of Karyotyping → Proximal Hypospadias or, a/w UDT

Indicat of Cystoscopy → " " to R/o Prostatic utricle

Ex:- · Penile length
· Mucosal slip lining the dorsu
· Extend → ? upto bladder neck
· Meatus → location, direction
Epispadias
H/o → · paring urine from abnormal location
· Incontinence +/−
· penile bend →
Syndromic H/o: reflux,

distance fro
penile
UO · trigone

Case history
&
Discussion - Wilms'

WT		Vs	Neuroblastoma
Mets -	SKIN / LUNGS		Facial bones (M.C.), long bones
Cross MIDLINE	x, Smooth		Boiver ✓, Irregular
Intramural Ca^{2+}	x (10%)		✓
Vascular encasement	x		✓
Paraneoplastic Symp	x		Phae (Palpitat^n / Headache / Flushing) VIP (diarrhoea hypokalemia) Brain (delayed milestones learning difficulty, ataxia Eye - opsoclonus Myoclonus
Inv.	Do CT Chest + abd always	Inv.	CT abd / Chest * Bone scan MIBG scan, X-ray Skull
Systemic Symptoms	⊕		⊖
Prognostic factors	HISTO (Blastema anaplasia POOR)		Shimada histo
	Shamberger Criterion		Stroma rich → Nodular (Poor) / Stroma-Poor → Immature ↑Mitotic rate
	LN +/-		Better - < 1 yr, non-adrenal 1° site
	LVI +/-		Stages Is / I / II
	Tumor spillage		No N-Myc amp.
	LOH @ 1p / 16q		Ⓝ ferritin Level,
	>500 gm		Poor → 17q⊕ 11q⊖ Short arm 1p⊖ ↑Dopamine
	Poor		

		5 yr Survival		
I -	Kidney R_0	>90%	I - R_0 / R_1	
II -	Extracap R_0	85-90	II - R_2 / N_1	
III -	R_1 / Spillage / LN⊕	80%	III - C/L N_1 - Cross midline	
IV -	Mets	50-70%	IV - mets	
V -	B/L		4s - < 1 yr I / II Liver / Skin	Pepper Syd → Spontaneous regression

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Resident In Urology
Date :

DD- WT/NeuroBlastoma / RP mass (Rhabdosarcoma)
Right Polycystic Kidney / Right Gross HN/ Multilocul
Renal Cyst / RCC / Cystic Nephroma (benign)

Chemo resistance in WILMS
- Anaplasia (So always RT)
- Rhabdoid / Clear Cell Sarcoma
  ↓
  So require RT even in Stage I

No Postop CI in NWTS if
<2 yrs
<550 gms.

In SIOP - Stage I
low risk (complete Necrosis after Chemo.

Solitary unresectable

B/L WILMS 4-6 %
PreopChemo x 6 weeks cycles
↓
Response Seen ? CT/MRI

GOOD → after 2 weeks – 4 weeks → NSS or even enucleath
POOR → B/L open Bx to see Anaplasia → Give Chemo Max 12 weeks

Do Sx before 2 weeks of Started Chemo

- B/L Neph + HD → 2 yrs → Renal Tx
  No Recurrence

SIOP

VIN + DAC
x 4 weeks
↓ Post Chemo
Stromal/epi → Predominant type i.e. poor response to therapy
Blastema → ↓ after chemo

Low Risk - Complete necrosis after Chemo

High Risk - Diffuse anaplasia or Blastema after Chemo

Late effects
- ♡ tox (DOX)
- Mus. Skeleton
- Reproductive (RT)
- 2° tumors (RT)

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Resident In Urology
. Date :

HISTORY

Abd. Mass
Abd Pain
Hematuria, fever, UTI,
HTN (2%)

Metastatic - Cough, dyspnea } LUNG
IVC - limb edema, ascites, varicocele, HTN, CHF, dilated veins

Syndromic
Visual disturbance
Speech disturbance
Mental Growth
} WAGR

Speech disturbance (macroglossia)
Hypertrophied organ
H/o fits, omphalocele
} DWS

Macrocephaly } SOTOS

Ambigous Genitalia } DDS Frazier

Lab - Proteinuria / Hb / Ca2+ Sup., Coagulat^n profile
VWD F-8 def.

WHAT TO ASK IN STIPULATED TIME GIVEN DURING A SHORT CASE

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Resident In Urology
Date :

CA BLADDER

- Hematuria
- dysuria
- wt loss/apetite
- Drug abuse
- mets - Cough, bone pain, jaundice, hemoptysis
- Smoking
- Occoupation
- Cyclophosphamide

STRICTURE

Trauma, Instrument
STD, Discharge, Sexual promiscuity, BXO
Lithuria, Stone dis
Circumcision

GUTB

Flank Pain, hematuria - G
LUTS, Incontinance - bladder
Scrotal Swelling / Sinus, Nodular
prostate, Beaded Vas, Penile nodu
female - amenorrhoea, Infertili
Constitutional - fever / LOW / LOA /
Cough, breathlessness H/o TB

Neurogenic Bladder

FUN + Incont + Retentn
Constipatn, learning disability
Erectn, ejaculatn, Paraparesis,
H/o trauma / Spine Surgery
CVA / DM (long Standing)

PUJO

Flank pain, flank mass
hematuria, UTI
Antenatal history
2° PUJO (Sx, TB, Stone)
Stone dis.

RCC / TCC

Abd lump, flank
pain, Hematuria
Smoking, WL / LOA
Analgesic / obesity HTN
Cyclophosphamide

ADPKD

HTN / family history, Pain,
Hematuria, flank mass
Renal failure, UTI

AML

Pregnancy Complicat°
Shagreen patch, ash
leaf spots, hematuria

PCC / Adrenal

See back
(46)

CA prostate

family histry
Hematuria, LOW / LOA,
LUTS / AUR, Perineal
heaviness, rectal Symptoms
H/o mets - backache
Cough, Chestpain, jaundice
SMOKING

Prostatitis

Pain after Intercourse
Perineal Pain, LUTS

Bladder Stone

Suprapubic pain,
Poor Stream, Straingy
pain, lithuria,
hematuria

PUV

(R) UDT - (R) Swelling in Inguinal / Scrotum or Testis In Scrotum an
LBW, Premature, Breech, Materal H/o DES, Early gestat°
Ass. hypospadias, Ecto Examinat° → ✓

CKD - 58+62

Dr. Ankush Jair

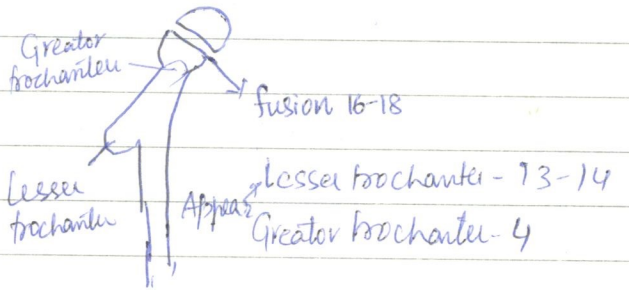
Dr. Ankush Jairath
Resident In Urology

Date :

X RAYS

- All coronal & Reconstructed films are MIP (maximal intensity Pic.)
- 25-60 min ⇒ CMD on Nephrogram [Iopromide - Ultravist] 370 mOsm = 37gm/100ml
- Max dose - CT IVU - 2ml/kg
  (Iodine) Angio - 2-3ml/kg
- Sacral Agenesis – Renshaw Class.
  - I. Partial / Total U/L Sacral agenesis
  - II Partial Sacral agenesis c B/L Symmetrical defect
  - III Ilium articulate c side of lowest Vertebra + ni
  - IV Caudal endplate of vertebrae rest above fused ilia or an iliac amphiarthrosis

PELVIC X RAY - AGE OF PATIENT



Fusion

Pubis c Inf. rami → 6-7 yrs

Ilium / Ischium / Pubis = 13-15 yrs

thelon $\frac{wt}{3} + 4$ upto 10 yrs age
ize

Fu Protocols

What investigation to get in FU and at what time ?

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Resident In Urology

Date :

Penile CA

UPTO N_1 dis	1-2 yrs	evey 3-6 month	Clin Exam
	3-5 yrs	even 6-12 months	
N_2 N_3	C.E Same		CXR / CT Chest
	1st yr -	3 month	6 month
	2nd yr -	6 month	12 month

CT abd

UT TCC

T_0 T_1	Cystoscopy	3 mo x 1 yearly → Increase Interval
	Imaging	12 months +/- CXR
Rest all	Cystoscopy	3 mo x 1 year → Increase Interval
	Imaging	6 month +/- CXR

Bladder

Cystectomy

Cytology, LFT, S.Cr, Electrolyte 3-6 mo x 2yrly → CIndia
CXR / CT Chest or UT / Abd / Pelvis 3-6 mo x 2yrly
Urethral wash Cytology (if Tis) 6-12 mo.

NMIBC -

Cytology + Scopy → 3 mo. x 2yrs
CT → 1 year x 2yrs

Surveillance → Seminoma → 3 mont CT
Rest Everything CXR / PE / TM = 3-4 mo
CT - 6 mo x 2 yr

Testis - SURV. ACTIVE T/t
PE/TM CT CXR

1
2
3
4
5

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Date :

CT Criterion of enlarge L.Nodes

CA Bladder — Pelvic ≥ 8 mm
Abdomen ≥ 10 mm

CA Testis — Landing area 4 mm
Outside landing area 10 mm

CA RCC — HILAR / RETEROPERITONEAL ≥ 2cm

CA Prostate — Pelvic L.node ≥ 1 cm

Survival 5yrs

	Bladder / UT		TESTIS		PENIS-CFS	
T_1	80-90	80	Good	90	No	90
T_2	60	60	Int.	80	N_1	70
T_3	40	15-30	bad	50	N_2	50
T_4	30	0-15			N_3	35
N_1	20					
M_1	5					

%age of L.node Involvement @ 5yrs

	RCC – lung mets		CA Bladder
T_1	1%	BLUTES	5%
T_2	5%		20%
T_3	10%		40%
T_4	30%	>40%	60%

CA Testis In CS-I

Seminoma	Low risk 5	T_{is} T_a T_1G_1
	High risk 15%	T_1G_2 No LVI
NSGCT	Low 20%	⊕ LVI
	Interm 40%	
	Hight 60%	T_4G_3 T_{234}

CA PENIS
10%
25-
40-50%
50-70%

CA Prostate @ 10 yrs

Low risk	5% 20%	20 CHODAK
Intermed Risk	20 40%	40 META
High risk	40 60%	60 ANALYSIS

Inguinal with mets

Chemotherapy Used

Penile CA — PIP / TIP ... or

	mg/m²
Paclitaxel	175 + Predni
Ifosfamide	1200 + Mesna
Cisplatin	25

FLOUROURACIL 1000 mg/m² → Stomatis, Gastritis

Prostate CA

Abiraterone → 1000 mg + 10mg
Docetaxel → 75 mg/m² + 10
Cabazitaxel → 25 mg/m² + 10
HONVAN → 120 mg 3 tab × 3 times

CA Testis

Bleomycin	– Testdose	30 units
Etoposide	Alopecia BMD	100 mg/m²
P Cisplatin	↓mg	20 mg/m²

ETOPOSIDE → In Pulm mets

Ve	Vinblastine OR	0.11 mg/kg
I	Ifosfamide	1200 mg/m²
P	Cisplatin	20 mg/m²

	CARBOPLATIN	700 mg/m²
	ETOPOSIDE	750 mg/m²
	PACLITAXEL	200 mg/m² over 24hr
	IFOSFAMIDE	2000 mg/m² over 4 hr

riterion of enlarge L.Nodes

≥ 8 mm

≥ 10 mm

rea 4 mm

rea 10 mm

ETEROPERITONEAL ≥2cm

node ≥1 cm

PENIS-CFS
No 90
N1 70
N2 60
N3 35

@ 5yrs

		CA Testis In CS-I	CA PENIS
Seminoma	Low risk	5	T_{is} T_a T_1G_1 10%
	High risk	15%	T_1G_2 No LVI 25-35%
NSGCT	Low	20%	⊕ LVI 40-50%
	Interm	40%	
	Hight	60%	T_{1G3} T_{234} 50-70%

30 → Stat → all

CHEMOTHERAPY SCHEDULES

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Resident In Urology

18

Date :

Chemotherapy Used

Penile CA — PIP/TIP or 5-FU + Cisplatin

		mg/m²	+	Day		
(DOCE)	Paclitaxel	175	+ Prednisolo	1	Glass bottle	every 3 weeks
Hyric Cystitis	Ifosfamide	1200	+ Mesna	1 2 3		3/4 Cycles
	Cisplatin	25		1 2 3		

FLOUROURACIC 1000 mg/m² → Stomatis, Gastritis, NVD

CISPLATIN 100mg/m² → Nephro / BMD / OTO / Peripher Neuropathy

PTF

Prostate CA

Abiraterone 1000 mg + 10mg

Docetaxel 75 mg/m² + 10mg P every 21 days × 6 cycles

Cabazitaxel → 25 mg/m² + 10mg P every 21 days × 6 cycles

HONVAN → 120 mg 3 tab × 3 times SE - DVT & ♡ effect (Cardiotoxic)

So Give Warfarin / ↵ Aspirin

CA Testis

				Days	
direct IV	Bleomycin	- Testdose	30 units	1,8,15	every 3 weeks
DNS	Etoposide	Alopecia BMD	100 mg/m² ♡	1-5	2/3/4 Cycles
NS	P Cisplatin	+mg	20 mg/m²	1-5	

ETOPOSIDE → In Pulm mets where Bleo Can't be given

Ve	Vinblastine OR	0.11 mg/kg	1-2	every 3 weeks
I	Ifosfamide	1200 mg/m²	1-5	(Mesna 30 min before then 4 hrs & 8 hrs after)
P	Cisplatin	20 mg/m²	1-5	

HIGH DOSE

	CARBOPLATIN	700 mg/m²		
	ETOPOSIDE	750 mg/m²		
	PACLITAXEL	200 mg/m² over 24hrs	Day 1	2 Cycle 14 days apart ⇒
→	IFOSFAMIDE	2000 mg/m² over 4 hrs	2,3,4	

(GFR+25)×1.7 Day

Carboplatin AUC 7 1-3

Etoposide 400 mg/m² 1-3

× 3 Cycles

Dr. Ankush Jairath

Dr. Ankush Jairath
Resident In Urology
Date :

1st 500 ml Saline + Rantec + Emeset
2nd Mannitol
3rd (G) → (4th) → C 5th → 1 litre saline more

CA Bladder / UU TCC — Days — NS — over ___ hrs

every 3 week
- Gemcitabine 1000 mg/m² (NS) 1, 8 — 1 Litre — 1·5 hrs
- Cisplatin 70 mg/m² (NS) 1 — 1 Litre — 1·5 hrs

↓ Mannitol 100 ml → Prevent any renal damage

- If Cr.CL < 60 ml/min → Donot Substitute Cisplatin ē Carboplatin
  ↓ Give split dose of Cisplatin 35 mg/m² on day 1&2 or 1&8
- If Cr.CL < 30 ml/min → Single agen based Chemo ⇒ Taxanes / Carboplatin / Methot / Vincri / Doxo
- In ESRD ⇒ Give 50% dose → Dialysis ē in 3 hrs

HIG DOSE

4 week cycle
- Methotrexate (Stat) 30 mg/m² — 1, 8
- Vinblastin 1 gm/m² — 1,
- Actinomycin 100 mg/day — 1,2,3,4,5
- Cisplatin 100 mg/m² — 1

1/3rd → 2 weeks
Double dose

Malignat ACC
~~Malignant PCC~~ → C-MED

Malignant PCC → CVD

Cisplatin
Mitotane – Steroid
Etoposide
Doxorubicin

C → Cyclophosphamide
V → Vincystine
D → Dacarbazine

PROSTATE

LEUPROLIDE	S/C	22·5 (3 moths)	45 (6 months)
TRIPTORELIN	I/M	11·25 (3 months)	22·5 (6 months)
Abiraterone	P/O	1gm (4 tab) + Prednisolone	
DEGARELIX (allergic, Renal problem, Cost)	S/C	240 Stat → 240 mg	80 mg (monthly)
Enzalutamide	P/O	160 mg (60–360 mg)	

TNM classification of urological malignancies (7th edition, AJCC)

TNM of Penile Cancer

Primary tumour (T)	
Tx	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma in situ
Ta	Noninvasive verrucous carcinoma* (
T1a (VHG)	Tumor invades subepithelial connective tissue without lymph vascular invasion and is not poorly differentiated (i.e., grade 3–4)
T1b (VHG)	Tumor invades subepithelial connective tissue withlymph vascular invasion or is poorly differentiated
T2	Tumor invades corpus spongiosum or cavernosum
T3	Tumor invades urethra
T4	Tumor invades other adjacent structures (including the prostate)
Regional Lymph Nodes (N)	
c- Clinical stage definition based on palpation and imaging p- Pathologic stage defi nition based on biopsy or surgical excision.	
cNx	Regional lymph nodes cannot be assessed
pNX	Regional lymph nodes cannot be assessed
cN0	No palpable or visibly enlarged inguinal lymph nodes
pN0	No regional lymph node metastasis
cN1	Palpable mobile unilateral inguinal lymph node
pN1	Metastasis in a single inguinal lymph node
cN2	Palpable mobile multiple or bilateral inguinal lymph nodes
pN2	Metastasis in multiple or bilateral inguinal lymph nodes
cN3	Palpable fi xed inguinal nodal mass or pelvic lymphadenopathy unilateral or bilateral
pN3	Extranodal extension of lymph node metastasis or pelvic lymph node(s) unilateral or bilateral
Distance Metastasis (M)	
M0	No distance metastasis
M1	Distance metastasis* *Lymph node metastasis outside of the true pelvis inaddition to visceral or bone sites

1st 500 ml Saline + Rantec + Emeset
2nd Mannitol
3rd (G) → (4th) → C 5th → 1 litre Saline more

C Days NS over ___ hrs
00 mg/m2 (NS) 1, 8 1 litre 1·5 hrs
0 mg/m2 (NS) 1 1 litre 1·5 hrs
00 ml → Prevent any renal damage
l/min → Donot Substitute Cisplatin c Carboplatin
of Cisplatin 35 mg/m² on day 1&2 or 1&8

Single agen ⇒ Taxanes / Carboplatin
l/min → based Chemo Methot / Vincri / Doxo
dose → Dialysis cin 3hrs HIG DOSE

30 mg/m² 1, 8] 1/3rd
1 gm/m² 1,] 2 weeks
100 mg/day 1,2,3,4,5] Double dose
100 mg/m² 1

C-MED Malignant PCC → CVD
C → Cyclophosphamide
V → Vincystine
D → Dacarbazine

S/C 22·5 (3 months) 45 (6 months)
I/M 11·25 (3 months) 22·5 (6 months)
P/O 1gm (4 tab) + Prednisolone
S/C 240 Stat → 80 (monthly)
problem, Cost) 240 mg 80 mg
P/O 160 mg (60-360 mg)

ONCO STAGING - ALL TUMORS

Dr. Ankush Jairath
Resident In Urolog
Date :

TNM classification of urological malignancies (7th edition, AJCC)

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cN1	Palpable mobile unilateral inguinal lymph node
pN1	Metastasis in a single inguinal lymph node
cN2	Palpable mobile multiple or bilateral inguinal lymph nodes
pN2	Metastasis in multiple or bilateral inguinal lymph nodes
cN3	Palpable fi xed inguinal nodal mass or pelvic lymphadenopathy unilateral or bilateral
pN3	Extranodal extension of lymph node metastasis or pelvic lymph node(s) unilateral or bilateral
Distance Metastasis (M)	
M0	No distance metastasis
M1	Distance metastasis* *Lymph node metastasis outside of the true pelvis inaddition to visceral or bone sites

TNM of the prostate Cancer

Primary tumour (T)	
Tx	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Clinically inapparent tumor neither palpable nor visible by imaging
T1a	Tumor incidental histologic f nding in 5% or less of tissue resected
T1b	Tumor incidental histologic finding in more than 5% of tissue resected
T1c	Tumor identified by needle biopsy (e.g., because of elevated PSA)
T2	Tumor confined within prostate*
pT2	Organ confined
T2a	Tumor involves one-half of one lobe or less
pT2a	Unilateral, one-half of one side or less
T2b	Tumor involves more than one-half of one lobe but not both lobes
pT2b	Unilateral, involving more than one-half of side butnot both sides
T2c	Tumor involves both lobes
pT2c	Bilateral disease
T3	Tumor extends through the prostate capsule
pT3	Extraprostatic extension
T3a	Extracapsular extension (unilateral or bilateral)
pT3a	Extraprostatic extension or microscopic invasionof bladder neck ****Positive surgical margin should be indicated by an R1descriptor (residual microscopic disease).
T3b	Tumor invades seminal vesicle(s)
pT3b	Seminal vesicle invasion
T4	Tumor is fi xed or invades adjacent structures other than seminal vesicles such as external sphincter, rectum, bladder, levator muscles, and/ or pelvic wall
pT4	Invasion of rectum, levator muscles, and /or pelvic wall
Regional Lymph Nodes (N)	
NX	Regional lymph nodes were not assessed
pNX	Regional nodes not sampled
N0	No regional lymph node metastasis
pN0	No positive regional nodes
N1	Metastasis in regional lymph node(s)
pN1	Metastases in regional node(s)
Distant Metastasis (M)	
M0	No distant metastasis
M1	Distant metastasis
M1a	Nonregional lymph node(s)
M1b	Bone(s)
M1c	Other site(s) with or without bone disease

Single ←

Dr. Ankush Jairath

1st 500 ml Saline + Rantec + Emeset
2nd Mannitol
3rd (G) → (4th) → C 5th → 1 litre Saline more

C	Days	NS	over ___ hrs
00 mg/m2 (NS)	1, 8	1 litre	1·5 hrs
0 mg/m2 (NS)	1	1 litre	1·5 hrs

00 ml → Prevent any renal damage

l/min → Donot Substitute Cisplatin c Carboplatin
of Cisplatin 35 mg/m² on day 1&2 or 1&8

Single agen ⇒ Taxanes / Carboplatin
l/min → based Chemo Methot / Vincri / Doxo
dose → Dialysis cin 3hrs HIG DOSE

30 mg/m² 1, 8] 1/3rd → 2 weeks
1 gm/m² 1,]
100 mg/day 1,2,3,4,5] Double dose
100 mg/m² 1]

C-MED Malignant PCC → CVD
C → Cyclophosphamide
V → Vincystine
D → Dacarbazine

S/C	22·5 (3 months)	45 (6 months)
I/M	11·25 (3 months)	22·5 (6 months)
P/O	1gm (4 tab) + Prednisolone	
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problem, Cost)	240 mg	80 mg
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pNX	Regional lymph nodes cannot be assessed
cN0	No palpable or visibly enlarged inguinal lymph nodes
pN0	No regional lymph node metastasis
cN1	Palpable mobile unilateral inguinal lymph node
pN1	Metastasis in a single inguinal lymph node
cN2	Palpable mobile multiple or bilateral inguinal lymph nodes
pN2	Metastasis in multiple or bilateral inguinal lymph nodes
cN3	Palpable fi xed inguinal nodal mass or pelvic lymphadenopathy unilateral or bilateral
pN3	Extranodal extension of lymph node metastasis or pelvic lymph node(s) unilateral or bilateral
Distance Metastasis (M)	
M0	No distance metastasis
M1	Distance metastasis* *Lymph node metastasis outside of the true pelvis inaddition to visceral or bone sites

TNM of the prostate Cancer

Primary tumour (T)	
Tx	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Clinically inapparent tumor neither palpable nor visible by imaging
T1a	Tumor incidental histologic f nding in 5% or less of tissue resected
T1b	Tumor incidental histologic finding in more than 5% of tissue resected
T1c	Tumor identified by needle biopsy (e.g., because of elevated PSA)
T2	Tumor confined within prostate*
pT2	Organ confined
T2a	Tumor involves one-half of one lobe or less
pT2a	Unilateral, one-half of one side or less
T2b	Tumor involves more than one-half of one lobe but not both lobes
pT2b	Unilateral, involving more than one-half of side butnot both sides
T2c	Tumor involves both lobes
pT2c	Bilateral disease
T3	Tumor extends through the prostate capsule
pT3	Extraprostatic extension
T3a	Extracapsular extension (unilateral or bilateral)
pT3a	Extraprostatic extension or microscopic invasionof bladder neck ****Positive surgical margin should be indicated by an R1descriptor (residual microscopic disease).
T3b	Tumor invades seminal vesicle(s)
pT3b	Seminal vesicle invasion
T4	Tumor is fi xed or invades adjacent structures other than seminal vesicles such as external sphincter, rectum, bladder, levator muscles, and/ or pelvic wall
pT4	Invasion of rectum, levator muscles, and /or pelvic wall
Regional Lymph Nodes (N)	
NX	Regional lymph nodes were not assessed
pNX	Regional nodes not sampled
N0	No regional lymph node metastasis
pN0	No positive regional nodes
N1	Metastasis in regional lymph node(s)
pN1	Metastases in regional node(s)
Distant Metastasis (M)	
M0	No distant metastasis
M1	Distant metastasis
M1a	Nonregional lymph node(s)
M1b	Bone(s)
M1c	Other site(s) with or without bone disease

Single ←

1st 500 ml Saline + Rantec + Emeset
2nd Mannitol
3rd (G) → (4th) → C 5th → I like Saline more

TNM of carcinoma testis

Primary tumour (T)	
pTX	Primary tumor cannot be assessed
pT0	No evidence of primary tumor (e.g., histologic scar in testis)
pTis	Intratubular germ cell neoplasia (carcinoma in situ)
pT1	Tumor limited to the testis and epididymis without vascular/lymphatic invasion; tumor may invade into the tunica albuginea but not the tunica vaginalis
pT2	Tumor limited to the testis and epididymis with vascular/lymphatic invasion, or tumor extending through the tunica albuginea with involvement of the tunica vaginalis
pT3	Tumor invades the spermatic cord with or without vascular/lymphatic invasion
pT4	Tumor invades the scrotum with or without vascular/lymphatic invasion
Regional Lymph Nodes (N)	
Clinical	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis with a lymph node mass 2 cm or less in greatest dimension; or multiple lymph nodes, none more than 2 cm in greatest dimension
N2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or multiple lymph nodes, any one mass greater than 2 cm but not more than 5 cm in greatest dimension
N3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
Pathologic (pN)	
pNX	Regional lymph nodes cannot be assessed
pN0	No regional lymph node metastasis
pN1	Metastasis with a lymph node mass 2 cm or less in greatest dimension and less than or equal to five nodes positive, none more than 2 cm in greatest dimension
pN2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or more than fi ve nodes positive, none more than 5 cm; or evidence of extranodal extension of tumor
pN3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
Distant Metastasis (M)	
M	No distant metastasis
M1	Distant metastasis
M1a	Nonregional nodal or pulmonary metastasis
M1b	Distant metastasis other than to nonregional lymph nodes and lung

Serum tumor markers (S)	
SX	Marker studies not available or not performed
S0	Marker study levels within normal limits
S1	LDH < 1.5 × N * and hCG (mIu/ml)<5,000 and AFP (ng/ml) <1,000
S2	LDH 1.5–10 × N or hCG (mIu/ml)5,000–50,000 or AFP (ng/ml)1,000–10,000
S3	LDH > 10 × N or hCG (mIu/ml) > 50,000or AFP (ng/ml) > 10,000

* N indicates the upper limit of normal for the LDH assay.

IA - Testis
IB - Testis & LVI+ TV+
LN.
2A <2 3A Non Rx
2B 2-5 3B LUNG
2C >5 3C extra Pulm Visceral

TNM of the Renal Cancer

Primary Tumor (T)	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Tumor 7 cm or less in greatest dimension, limited to the kidney
T1a	Tumor 4 cm or less in greatest dimension, limited to the kidney
T1b	Tumor more than 4 cm but not more than 7 cm in greatest dimension limited to the kidney
T2	Tumor more than 7 cm in greatest dimension, limited to the kidney
T2a	Tumor more than 7 cm but less than or equal to 10 cm in greatest dimension, limited to the kidney
T2b	Tumor more than 10 cm, limited to the kidney
T3	Tumor extends into major veins or perinephric tissues but not into the ipsilateral adrenal gland and not beyond Gerota's fascia
T3a	Tumor grossly extends into the renal vein or its segmental (muscle containing) branches, or tumor invades perirenal and/or renal sinus fat but not beyond Gerota's fascia
T3b	Tumor grossly extends into the vena cava below the diaphragm
T3c	Tumor grossly extends into the vena cava above the diaphragm or invades the wall of the vena cava
T4	Tumor invades beyond Gerota's fascia (including contiguous extension into the ipsilateral adrenal gland)
Regional Lymph Nodes (N)	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in regional lymph node(s) (Figure 43.8)
Distant Metastasis (M)	
M0	No distant metastasis
M1	Distant metastasis

DEGARELIX S/C — 240 Stat → 80 (monthly)
(allergic, Renal problem, Cost) — 240 mg — 80 mg
Enzalutamide P/O — 160 mg (60-360 mg)

ADRENAL – Adult Stage
T1 <5cm Confined to adrenal I

TNM of the pelvis and the ureter Urothelial Cancer

Primary tumour (T)	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
TA	Papillary noninvasive carcinoma
Tis	Carcinoma in situ
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades the muscularis
T3	(For renal pelvis only) Tumor invades beyond muscularis into peripelvic fat or the renal parenchyma T3. (For ureter only) Tumor invades beyond muscularis into periureteric fat
T4	Tumor invades adjacent organs, or through the kidney into the perinephric fat
Regional Lymph Nodes (N)	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in a single lymph node, 2 cm or less in greatest dimension
N2	Metastasis in a single lymph node, more than 2 cm but not more than 5 cm ingreatest dimension; or multiple lymph nodes, none more than 5 cm in greatest dimension
N3	Metastasis in a lymph node, more than 5 cm in greatest dimension
*Note: Laterality does not affect the N classification	
Distant Metastasis (M)	
M0	No distant metastasis (no pathologic M0; use clinical M to complete stage group)
M1	Distant metastasis

TNM of the bladder cancer

Primary Tumor (T)	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Ta	Noninvasive papillary carcinoma
Tis	Carcinoma in situ: "fl at tumor"
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades muscularis propria
pT2a	Tumor invades superfi cial muscularis propria (inner half)
pT2b	Tumor invades deep muscularis propria (outer half)
T3	Tumor invades perivesical tissue
pT3a	Microscopically
pT3b	Macroscopically (extravesical mass)
T4	Tumor invades any of the following: prostatic stroma, seminal vesicles, uterus, vagina, pelvic wall, abdominal wall
T4a	Tumor invades prostatic stroma, uterus, vagina
T4b	Tumor invades pelvic wall, abdominal wall
Regional Lymph Nodes (N)	
Regional lymph nodes include both primary and secondary drainage regions. All other nodes above the aortic bifurcation are considered distant lymph nodes.	
NX	Lymph nodes cannot be assessed
N0	No lymph node metastasis
N1	Single regional lymph node metastasis in the true pelvis (hypogastric, obturator, external iliac, or presacral lymph node)
N2	Multiple regional lymph node metastasis in the true pelvis (hypogastric, obturator, external iliac, or presacral lymph node metastasis)
N3	Lymph node metastasis to the common iliac lymph nodes
Distant Metastasis (M)	
M0	No distant metastasis
M1	Distance metastasis

Single HOPE
multiple HOPE

ml Saline + Rantec + Emeset
nnitol
→ (4th) → C 5th → I like Saline more

Serum tumor markers (S)	
SX	Marker studies not available or not performed
S0	Marker study levels within normal limits

	43.8)
Distant Metastasis (M)	
M0	No distant metastasis
M1	Distant metastasis

etastasis
nonregional

240 Stat → 80 (monthly)
240 mg
80 mg
, Cost)
160 mg (60-360 mg)

Dr. Ankush Jairath
Resident In Urology
Date :

ADRENAL - Adult

		Stage	
T_1	<5cm confined to adrenal	I	
T_2	>5cm Confined to adrenal	II	
T_3	Periadrenal fat	III	N_1
T_4	adjacent organs	IV	M_1

- Child

I, II	Complete Removal	<200gm	+ Ro
		>200gm	+ Ro
III	R, (macro/microscopic)		
IV	DISTANT		

Dr. Ankush Jairath

DIFFERENTIAL DIAGNOSIS OF COMMON UROLOGICAL PROBLEMS

1st - PAIN

DD of Common urological Complaints

38

(A) Pain

- Pain ± Rec UTI [fever, chills] ± OM
  - Pap Necrosis
  - EPN
  - perinephric abscess
  - Pyonephrosis
- Dull aching
  - U/L
    - Young
      - Renal Stones
      - PUJO
      - VUJO X
      - Obst MU
      - ureterocele
      - GUTB
      - ureteric Stricture
      - papillary necrosis
      - pyelonephritis
      - Renal Malignancy
    - OLD
      - Renal Stones
      - RCC
      - UTUC
      - AML (Young female)
      - ADPKD
      - PUJO
      - ureteric stricture
      - GUTB
      - pap. necrosis
      - pyelonephritis (XGPN, EPN)
      - (U/L renal enlargement NFK Large stone)
  - B/L
    - B/L Stones
    - B/L PUJO
    - B/L VUJO
    - B/L ureteric stricture
    - B/L ADPKD
    - B/L papillary necrosis
    - Ca cervix
    - RPF
    - Endometriosis
- Colicky
  - ureteric Calculus
  - RCC/TCC ± clot colic.
  - Fungal ball.

2nd LUMP ABDOMEN

(B) Lump abdomen.

Large lump
- RCC
- ACC
- XGPN
- ADPKD.
- RP/Renal Sarcoma

Flank Mass

Young age
- HN (PUJO)
- HN (Stones)
- Cystic kidney
- pyonephrosis
- perinephric abscess
- perirenal hematoma (trauma)
- XGPN
- Renal Mass.

Old
- RCC
- ADPK
- XGPN
- Stone HN
- PUJO HN
- pyone
- perir abscess
- EPI

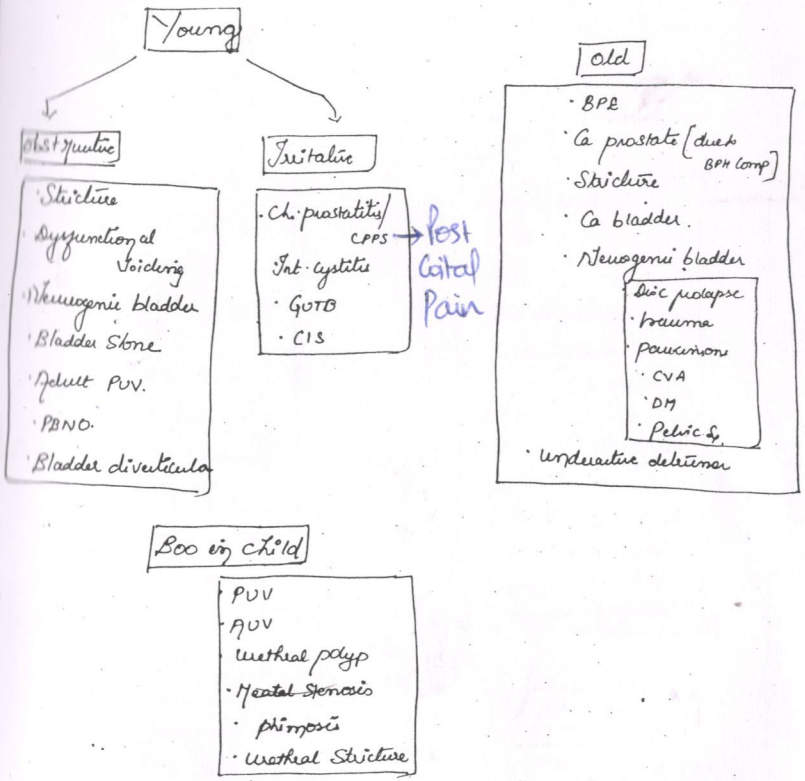
Abd Mass in Children
- HN
- Wilms.
- Neuroblastoma.
- MCDK (in neonate & Children)

Paraumblical Mass

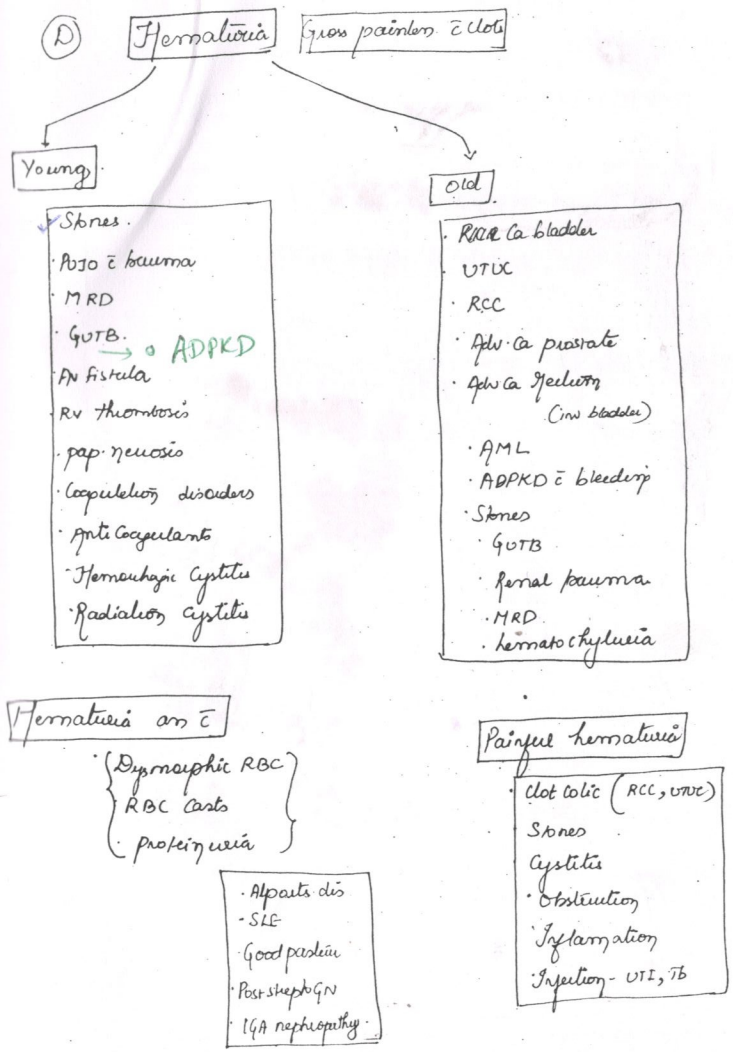
RPF
- Hard,
- fix
- Non Ballotable

L.Node Mass
- RP Mass
- Ca 2° Aortic Aneurysm

© LUTS



HEMATURIA



(UROGRAFFIN)

dimeglumine

Dr. Ankush Jairath
Resident In Urology

CASE HISTORY 15 - RPF

RETEROPERITONEAL FIBROSIS / ORMOND DIS

Mass → Midline / Paraumblical / fix / Hard / non-ballotable / not move c Respirat^{n}

Pain → Vague / flank / dull - noncolicky / may radiate to abd / loin unchanged by posture / Releaved by Aspirin ratherthan Narcotics
Poorly localised pain

Constitutnal Anorexia, Weight loss, low grade fever

Azotemia, oliguria, obs uropathy

DRUG history - Methyl Sergide, B#, LSD, Dopa, Cocaine Amphetamine Hydralazin

(NO) → PE / DVT / Scrotal Swell^{g} / Varicocele

Urine R/E - microscopic hematuria / Proteinuria due to IVC Compression by mass

H/o Infect^{n} - TB / Histoplasmosis / Actinomycosis

H/o Radiat^{n} Chemical - Asbestosis

H/o Autoimmune dis → Thyroidosis / Pancreatitis / Ankylo Spondilitis / Cholangitis / uveitis

- Hematuria - 1
- Abd. mass - 40
- Ulcer - 64
- Pain - 41
- EG - 14, 22

NEUROGENIC BLADDER - BASIC CONCEPT

LMN (Sacral / Infrasacral)

Dribbling / Drop by Drop Continous

↓

Local arc take over f(n) of upper tract

↓

very weak but pt may remain dry for some time

So some stream & some Inbetn continant period

- Low pressure System
- Incontinance - overflow
- Bladder - always full Palpable
- but no rise of pressure

So Kidneys are preserved

UMN (Supra Sacral)

Spinal cord lesion above $S_{2,3,4}$

↓

So sensat' do not go to Cortex

↓

So no Sensatn & efferent do not Cause detrussor Contraction

↓

So local arc takes control eventu but arc is generally powerful

↓

Powerful detrussor Contraction but not ↓ Cortex controll so Involuntary

- So pt. pass bt of urine & good Stream but no Controll over it & Inbetn continant period
- Uninhibited Bladder :: of Cut off but bladder Contraction can happen at any Bladder volume
- High Pressure :: of Good detrusor Contraction → High pressure Neurogenic bladder → DANGEROUS B/L HUN.
- Defective co-ordination betn Detrussor & Sphinter → functional obstruction

Uninhibited bladder → like childs bladder :: it is not ↓ Cortex controll

UMN

↓

So both bladder & Sphinter becomes effective

↓

Spasticity of → Detrussor, Sphinter

↓

↑↑ Bladder pressure but urine not coming out

↓

Reflux → B/L HUN

Trabeculation → Diverticula, Periureteric Diverticula

↓ If cont.

Detrussor goes into fatigue

Decompensation of Detrussor

So it' is like LMN like

↓

Bladder gets distented

↓

Continous urine leak Starts

- Basic Aim In T/t → Preservation of Renal fun (Priority)
  → Socially acceptable Continance

- Investigate :→ To measure pressure in bladder — UDM
  [when U are not sure UMN vs LMN]

  Cystomerogram EMG UPP Uroflowmetry

- T/t

LMN :- Bladder full & Cont. dribbling

Why to T/t → ↓ UTI / PN / ↓ Infection

Best T/t → CIC — 3-4hrs < Pt dry / Bladder empty → No UTI

UMN :- Detrussor & Sphinter Both effected → high pressure → detrusor ↓ elasticity so poorly compliant & hypertrophy

So Poorly Compliant bladder → even c 100 ml of urine pressure generated is high → Threat to Kidney

Problem - High pressure, Small Capacity, Sphinter Spasticity

so Catch pt early → α # ⇒ Relax Sphinter
↳ anticholi ⇒ Oxybutinin / Tropan
↓ detrussor Contractility

Late Stage (Bladder already less / HT / Sacculation / Collagen deposits) → Medical therapy not benificial

⇓

Correct assessment of Capacity
(Do Cystoscopy)

MCUG → Reflux / Capacity

If Capacity Good > 300 ml
↓
- Tell pt: not to void as to keep bladder pressure ↓
- Start medical therapy
- CIC

< 250 ml / B/L HUN
↓
Aim → To ↑se the Capacity & ↓se the pressure
- No Role of CIC alone
- T/t → Augmentation c CIC

VVF

INTRAVENOUS PYELOGRAPHY - BASIC CONCEPT

I.V. Contrast → Glomerular filteration → Collecting tubules → PCS excretn

1st Gel Scout film → Calculus (ROS), Skeleton ab(N), Shadow (Psoas & liver)
Intestinal gas pattern (ileus- Stone/obstructn) Calcification
Foreign body, Abd. masses (Ground Glass appearance)

Cappillaries get filled
In 1st 2 min itself

2nd film @ 2 min → Nephrogram phase (Cortex)
Contrast came in Kidney but not into PCS, Soft tissue shadow become dense & distributed all along Kidney Cortex

3rd film @ 5 min (Promptness of excretion)
(N) Fx[n] Kidney contrast appear in PCS in 1st 5-10 min
Donot comment on function → always say excretn of contrast

4th film @ 20 min → Contrast Should come in Bladder
→ Come to know about PCS defect

5th film @ 45 min [PRONE] To assess drainage B/L ⊆ Is better Seen in prone position
- If in this contrast in PCS (+) then its ab(N)

6th film Full Bladder
→ 7th film Post void Plate (+)

8th film - Oblique (R/L) In case of Stone to plan ? Calyx puncture

Delayed Dense Nephrogram :- Persistance of Contrast in one ⊆ even when contrast has washed off from Right Side
DD - Acute ureteic obstructn, RAS, RVT, Acute PN

* Cupping Is ∵ of Pyramids & loss of cupping Is earliest Sign of obstruction
* AP view Is actually Kidney oblique view (30° rotation) so ant. & post Calyx donot overlap
* Previously compression over B/L flank was given to dilieneate PCS better
* Sometimes In single film ureter appears strictureous but Is actually propaganding peristaltic wave
* Note - Parentchymal thickness - Calyx visualisation
  - Kidney Surface (Scar) - Axis of Kidney (All/not)

Does Pt preparatn Actually needed ?

ideally In IVP ⇒ No Gas & ↓↓ Gas
- So U give Divol / Dulcolex / enema → but they can Clear fecal material & gas upto certain level

- Keep Pt. NBM → Create state of dehydratn → ↑ reabsorpt of free water undu effect of ↑ ADH
So filtered contrast quality / visualisatn quality ← Yes & thus film contrast & quality Yes.

Rapid Sequence IVP - For 1st 5-10 min several films are taken to see which calyx is filling 1st & difference in size of kidney, appearance time & concentration of excreted opagne after rapid injection of dye
- Mainly to diagnose RAS / Not used now a days

Disadv. → Contrast induced toxicity also Yes if pt. is dehydrated in pt. having HTN/DM/Children

However, now contrast material quality has improved so much that dehydrated state is actually not required

Infusion IVP ? → for subjects having boderline S. Creatinine IV. Infusion is started & urograffin is given as infusion rather than bolus injection (as in DM/HTN/Boderline GFR)

Contrast amount ? 300 mg of Iodine / Kg body wt: or 1 ml / Kg b.wt (max. 100ml)

Iso osmo. Iodixanol - very costly

Vial / ampule

- 100 mL
  - Multiple uses
- 20 ml
  - 76% urograffin (Iodine content)
  - each ml → 370 mg I_2
  - 60% urograffin
  - each ml → 292 mg I_2

* Any film after 4 hrs → Delayed film

Ultravist (IOPROMIDE) - I_2 Content 300 mg/mL Max → 85 but Osm is 600 m osm

X-rays

IR VOLTAGE CURRENT
Plate Size Central Ray
SID. Extent

AP (Supine) – Almost all urology X-rays are AP i.e. rays from anterior & Plate posterior so that spine & reteroperitoneum structures well visualised

PA – X-ray Chest
Spine less visualised

IR - Image receptor

X-ray KUB	X-ray Abdomen
• 2 fingerbreath above Xiphistemum upto 2 fingerbreath below Symphysis	Centre IR such that it comes approx 5 cm above iliac crest to include diaphragm OR 2 fingerbreath above max lateral chest bulge
• 50-60 KVp	• 60-80 KVp
• 30-40 mAs	• 30-40 mAs
• IR- Same	• IR Size 35x43 cm (14x17") lengthwise
	• Range from upper bordu of Pubic Symphysis to the diaphrag.

FOR AUG 10"x12" IR

MCUG 14"x17" IR

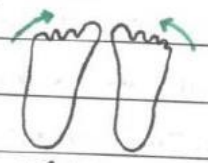
Conventional X-ray

Machine → X-ray film → dark room → X-ray

Digital X-ray

Machine → Digital plate → Processed by Computer → Generate Image
(>35,000 X-rays by 1 plate) — Pixels / resolution / Size can be adjusted

X-ray Pelvis - AP view



Pt Supine position

15° Internal Rotation

- IR - 14"x17"
- 70-80 kVp
- 12 mAs
- Surface to Image dis (SID) 100 cm

evaluation Criterion :- Entire pelvis & proximal femoral neck including Pelvic girdle, L5, Sacrum, Coccyx

Lumbar-lumbosacral spine - AP View

IR - 14"x17"

Hips & Knee flexed & pillow under head } back is in firm contact & the table

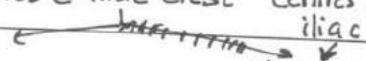
70-80 kVp

15 m As

SID 122cms

↓es lumbar curvature (lordosis) & open IV disk

(CR) Central Ray: Centres @ iliac Crest — Centres 1.5" above iliac crest



14"x17" — 11"x14"

Lumbo-Sacral Spine — Only lumbar Spine

Evaluation — T_{11} to S_{distil} — T_{12} to S_1

able to see vertebral bodies, disk spaces, spinous & transverse processes, lateral Psoas mu, SI joint,

Lateral View - IR - 14"x17" - lumbosacral
11"x14" - lumbar only

80-90 Kvp mAs 50 SID 100 cms

Turn pt to affected side so that mid coronal plane of body is alingned to midline of the grid → flex hips & knee to comfortable position

CR Same - as for AP view